DOCUMENT RESUME

ED 385 212 HE 028 500

AUTHOR	Engel, C., Ed.; And Others
TITLE	Annals of Community-Oriented Education, 1994.
INSTITUTION	Network of Community-Oriented Educational Institutions for Health Sciences (Netherlands).
REPORT NO	ISBN-90-73026-04-0; ISSN-0924-9192
PUB DATE	94
NOTE	477p.; Published annually. For volume 6, see HE 028 499.
PUB TYPE	Collected Works - Serials (022)
JOURNAL CIT	Annals of Community-Oriented Education; v7 1994
EDRS PRICE	MF01/PC20 Plus Postage.
DESCRIPTORS	Admission Criteria; *Allied Health Occupations Education; Career Choice; Comparative Education; Curriculum; Educational Methods; Educational Policy; Foreign Countries; Global Education; Health Occupations; Higher Education; *Medical Education; *School Community Programs; Student Evaluation; Teacher Education
IDENTIFIERS	*Community Oriented Schools; Problem Based Learning

ABSTRACT

This volume presents 47 papers addressing various aspects of community-oriented education; lists relevant and current books, articles and papers; and provides basic information about the international non-governmental organization, the Network of Community-Oriented Educational Institutions for Health Sciences. The papers are grouped into the following six categories: (1) strategies and change (with papers from India, Canada, the Philippines, China and the United Kingdom); (2) curricula and courses (from Australia, China, Sweden, the Netherlands, Ethiopia, India, Nigeria, Australia, and Egypt); (3) postgraduate and continuing education (Chile, Turkey, Italy, Australia, and Canada); (4) problem-based learning (United States, Australia, West Indies, Malaysia, and the Netherlands); (5) other methods and materials (Turkey, United Arab Emirates, Australia, Canada, Italy, United Kingdom, and Switzerland); and (6) assessment (India, Malaysia, Australia, United States, and Italy). A section on literature lists recent books, journals and newsletters, and recent papers on the following topics: assessment, assessment (objective structured clinical examinations), assessment with standardized patients, communication skills, community-based education, evaluation by students, ethics, learning, policy and strategy, problem-based learning, selection for admission, stress, and teaching. The final section provides information on the Network including a listing of member institutions, a listing of the Network executive committee and secretariat, a statement of the Network objectives, and an explanation of membership. (Many individual papers contain references.) (DB)

****
*   Reproductions supplied by EDRS are the best that can be made   *
*   from the original document.   *
****

HE

ED 385 212

Volume 7
1994

Published by
the Network of Community-Oriented
Educational Institutions for Health Sciences

Annals of Community-Oriented Education

HE 028 500

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY
Network of Community-
Oriented Educational
Institutions for Health
Sciences
TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

Editors
C. Engel, H. Schmidt, P. Vluggen

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it

☐ Minor changes have been made to improve reproduction quality

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

BEST COPY AVAILABLE

The Annals of Community-Oriented Education are published by the Network of Community-Oriented Educational Institutions for Health Sciences, a non-governmental organisation in official relation with the World Health Organization and the United Nations.
Member institutions of the Network receive a number of free copies.
Subscription rates are US $ 25 for non-members from developing countries and US $ 40 for those from industrialised countries. This includes bank administrative costs. Postage will be charged. Price for 20 copies or more on application. Copies may be ordered from the Secretariat of the Network, University of Limburg, P.O.B 616, 6200 MD Maastricht, The Netherlands.

Publication Policy

The Annals of Community-Oriented Education publish original investigations and descriptive or theoretical papers dealing with aspects of community-oriented, health-professions education. The Editors maintain a liberal policy concerning the nature of the subjects to be addressed. The Annals aim to encourage the study of instructional practices, approaches to student assessment and curricular aspects specific to this domain. In addition, papers addressing the broader issue of health care research will also be considered to the extent that they provide directions relevant for health professions education. The editors welcome contributions from investigators who are new to the field. The editors see as one of their objectives to help authors improve their contribution, provided the subject is of interest to a broad audience and the study is methodologically sound.
Authors are responsible to ensure that papers offered for publication in the Annals have not been published and are not being submitted to other journals.

Manuscripts

Manuscripts should be submitted **double line spaced and in duplicate** to the editor, Charles E. Engel, Network Secretariat, P.O.B 616, 6200 MD Maastricht, The Netherlands. Whenever possible, a floppy disk should be attached containing the text of the contribution processed by Word Perfect on an IBM-compatible computer, by one of the Apple Macintosh word processors (MacWrite, Microsoft Word), or as a text-only file.

Instruction to Authors

Please follow the style adopted in the Annals, and present the typescript with **double lines spaced** and wide margins. Tables and Figures, each with their captions, must be attached separately from the text. It is particularly important that the references are complete and follow the examples given below.

Neufeld, V.R., & Barrows, H.S. (1974). The McMaster philosophy: An approach to medical education. *Journal of Medical Education, 49,* 1040-1050.

Elstein, A.S., Shulman, L.S., & Sprafka, S.A. (1978). *Medical problem solving: An analysis of clinical reasoning.* Cambridge, MA: Harvard University Press.

Coulson, R.L., & Osborne, C.E. (1984). Insuring curricular content in a problem-based learning program. In: H.G. Schmidt, & M.L. de Volder (Eds.). *Tutorials in problem-based learning.* Assen, The Netherlands: Van Gorcum.

Norman, G.R., Muzzin, J.L., & Rosenthal, D. (1985). *Expert-novice differences in perception and categorisation in dermatology.* Paper presented at the Annual Meeting of the American Educational Research Association, Chicago.

Manuscripts should reach the editor by 31 October, 1994.

BEST COPY AVAILABLE

Volume 7
1994

Published by
the Network of Community-Oriented
Educational Institutions for Health Sciences

Annals of Community-Oriented Education

Editors
C. Engel, H. Schmidt, P. Vluggen

Editorial Board

Tamas Fülöp, 19, Avenue du Lignon, 1219 Geneva, Switzerland
Ron McAuley, McMaster University, Canada

© Copyright 1994
Network of Community-Oriented Educational Institutions for Health Sciences

ISBN 90-73026-04-0
ISSN 0924-9192

Annals of Community-Oriented Education
1994
Volume 7

© Copyright 1994
of the Network of
Community-Oriented
Educational Institutions
for Health Sciences

CONTENT

Editorial

Page

Strategies and Change

Strategies for Social Relevance and Community Orientation: Building on Indian Medical College Experiences 11
R. Narayan, T. Narayan and S. Tekur

The New Social Mandate for Medical Schools 21
R.F. Maudsley

Change in Medical Curricula through Feedback from Graduates with Experience in Peripheral Health Institutions 27
T. Narayan and R. Narayan

Retention of Physicians in Rural Areas: The Rural Polyclinic Concept 35
A.H. Manalo

An Exploratory Study of the Role and Responsibility of Bachelor Degree Nurses in China 39
Shen Ning

The Work of a Dean of Medicine 51
J.S.G. Biggs

Academic Counselling: Status and Perceptions of Staff and Students in a Traditional Medical School 59
T. Singh, M.V. Natu, A. Zachariah and P. Zachariah

A "Student-Centered" Educational Programme: Theorerical Considerations 63
J.E. Des Marchais and R.Hivon

Facilitating Professional Change in Primary Care 73
E. Fullard

Curricula and Courses

Implementation of A Philosophy at Newcastle, Australia 79
R.L. Henry

A Curriculum for Training Minority Physicians for Rural and Pastoral Areas in Xin Jiang 93
Yanjun Feng and Yaoxin Zhang

Faculty Views on the Development of a Three Year Curriculum for Traditional Chinese Medicine 101
Qiao Wangzhong

The Linköping Medical Programme: A Curriculum for Student-Centered Learning 107
B. Bergdahl, M. Koch, J. Ludvigsson and J. Wessman

General Practice, Medical Education and Community-Based Teaching: The Maastricht Experience 121
H.F.J.M. Crebolder and J.F.M. Metsemakers

Community-Based Team Training Programme at Jimma Institute of Health Sciences 131
Ch. Jira

Attitudinal Changes Following Slum Posting 139
P. Zachariah, A. Zachariah, M.V. Natu, K. Chaudhry and T. Singh

Undergraduate Training in Epidemiology and Research Methods at the University of Ibadan 145
M.C. Asuzu

An Integrated Ethics Programme in a Community-Oriented Medical School 153
K.R. Mitchell, C. Myser and I.H. Kerridge

Improving Effectiveness of Undergraduate Paediatric Teaching 167
M. Verma and T. Singh

Student Participation and Evaluation of the Training Programmes in Community Medical Education at the University Of Ibadan 173
M.C. Asuzu

Practicability of the Results of Elective Studies in the Community 183
A.M. Mishriky

Postgraduate and Continuing Education

Implementation Process of a Primary Care Residency Programme at the P. Universidad Catolica De Chile 191
J. Montero, R. Walker, V. Valdivieso, K. Puschel, T. Pantoja, B. Peñaloza and P. Rojas

Learning Health Management through Innovative Methods 199
F. Saçaklioglu, K. Vatansever, S. Yalcin, N. Bakirci, S. Toker, V. Mevsim, A. Kizilkaya and O. Bolukbasi

Education in Community Settings: The Fieldwork Component in a Problem-Based Curriculum for Primary Health Care Managers 203
G. De Virgilio, R. Guerra, A. Pinto, R.P. Frazzica, M. Babille

Educational Activities of the Royal Australasian College of Physicians 211
N. Paget, P. Johnston, S. Gilbertson, J. Du and M. Faithfull

Teaching Medical Interns the Effects of Values and Prejudices on the Doctor-Patient Relationship 219
F. Saçaklioglu and N. Bakirci

Continuing Education in Primary Care: Development and Implementation of a Province-Wide On-Site Programme 225
Ch. P. Leduc and Y. St-Arnaud

Problem-Based Learning

An Update on Problem-Based Learning at Harvard Medical School 237
M. S. Wetzel

Problem-Based Learning: An Option in Nurse Education 249
B. M. Andersen

The Problem-Based Learning Curriculum at Southern Illinois University School of Medicine: A Student Perspective 259
D.P. Regnier, J.L. Welsh and N.L. Quarton

Objectives Generated Separately by Staff and Students in Problem-Based Learning 267
S.A. West

Problem-Based Learning Experience of an Induction Phase 287
A.M.M. Roslani

Curriculum and Block Design in Problem-Based Learning: Lessons from Curriculum Reform 293
H.P.A. Boshuizen and H.A.M. Snellen-Balendong

Other Methods and Materials

Patchwork in Medical Education: Rural Internship 303
E. Eser, A. Mandiracioglu, F. Saçaklioglu, A. Karababa, F. Dogan and M. Tokgöz

The Skills Laboratory as Viewed by Medical Students 309
I.M. Hamo, M. Das and J. Lanphear

Improving English Communication Skills of Preclinical Medical Students 317
S.C. Hayes, D. Farnill and A.J. Sefton

The Learning Contract as an Effective Clinical Education Tool 329
P. Salvatori

Computer Assisted Training Programme: A Learning Tool in a Problem-Based Learning Curriculum 341
A. Pinto, F. Piccinno, R. Guerra, G. De Virgilio, E. Materia, A.M. Ahmed

Distance Learning of Clinical Epidemiology and Biostatistics 349
R.F. Heller

Illustrating Shared Ideas Using Hexagons 355
A. Donaldson and Ch. Edwards

Health Learning Materials Network of the World Health Organization 363
R. Ritson and M. Dowling

Assessment

Evaluation of Teachers - By Whom? 371
T. Singh, M.V. Natu, A. Zachariah and P. Zachariah

The PBQ - Problem-Based Questions in Assessment 375
E. Abu Bakar

Assessment During Rotations to District Hospitals in Rural Areas 383
R.L. Henry

The Student's Role in Assessment: Building a Progression in Problem-Based Learning (PBL) 389
L.C. Epstein and R.S. Northrup

Assessing Student Electives in the Newcastle Medical Course 399
A.M. Brown and R.L. Henry

Assessing Community Health Managers in a Problem-Based Learning Curriculum: The ICHM Recipe 407
G. De Virgilio

From the Literature

Some Recent Books 419

Some New Newsletters 421

Some Recent Papers 422
- Asessment 422
- Assessment-OSCE 430
- Assessment with Standardised Patients 432
- Communication Skills 433
- Community-Based 439
- Evaluation by Students 440
- Ethics 441
- Learning 442
- Policy and Strategy 446
- Problem-Based Learning 449
- Selection for Admission 465
- Stress 466
- Teaching 469

Network Information

Member Institutions 475

Network Executive Committee and Central Secretariat 477

Aims and Objectives of the Network of Community-Oriented Educational Institutions for Health Sciences 478

Membership of the Network 480

Editorial

The *Annals* set out to encourage, assist and support our authors; without them there would be little to publish.

However, the editors' first responsibility must be to consider our readers, their needs and interests. Without them, the *Annals* would remain unread. We owe a debt of a to our authors for their patience and perseverance in accepting our suggestions for the further perfection of what they wish to convey to the reader.

For our readers we are thus able to provide a wide spectrum of topics, aspects and ideas from a wide range of countries. This, the seventh Volume, offers well over forty papers from nineteen countries: Australia, Canada, Chile, China, Egypt, Ethiopia, India, Italy, Malaysia, the Netherlands, Trinidad, Turkey, the United Arab Emirates, the United Kingdom and the United States of America.

A comparison of the Content pages with those of the previous Volumes will show how the emphasis has moved from factual description of circumscribed pioneering ventures, frequently under very difficult conditions. Although there is room for more reports on critical evaluation of innovative programmes, the present Volume can offer important examples of good practice. There are also several thoughtful papers on strategy in the context of changes that affect the educational and organisational *states quo* and factors that present explicit challenges for responsive change within medical education.

Major challenges remain to be accepted by those who carry the mantle of authority and responsibility.

Will they ensure that creative effort devoted to teaching is duely recognised, acknowledged and rewarded?

Will they ensure that continuing education for senior teachers and postgraduate education for junior teachers can provide the students with consistently appropriate role models?

Will they ensure that the "political will" provides the conditions, facilities, resources and incentives within the health care system that will *empower and enable* health professionals to practise what they are taught and what they teach?

Perhaps an even more demanding challenge invites consideration of the needs for, and the human resources for health in the first half of the new century.

What will member countries be able to afford in the face of growing populations and limited resources?

What affect will the growth in higher education for the professions allied to medicine have on the nature of the tasks that require the special education of doctors?

How will the fruits of science and technology - the growing accuracy and discriminating power of diagnostic investigations and the growing number of well researched therapeutic interventions - affect the need for doctors, perhaps with different tasks and thus requiring a different education?

We await with great anticipation the opportunity and the privilege to publish papers on the challenges for the benefit of our readers within and beyond the membership of the Network.

The Editors

Annals of Community-Oriented Education
1994, Vol. 7, 11-20

STRATEGIES AND CHANGE

Strategies for Social Relevance and Community Orientation: Building on Indian Medical College Experiences

R. Narayan, T. Narayan and S. Tekur
Society for Community Health Awareness, Research and Action
Bangalore, India

Abstract

A survey of medical colleges in India was carried out as part of an interactive research project to identify initiatives in medical colleges that have tried to improve social relevance and community orientation in the curriculum. Twenty five colleges out of 125 colleges had tried out ideas. A total of 50 initiatives were identified which could be classified into six broad thrusts: a) improved pedagogy; b) widening horizons; c) improving skills development; d) moving beyond the teaching hospital; e) transcending existing compartmentalisation; and f) promoting self-directed learning. Six pace-setter colleges were identified, and their key innovative strategies are outlined. Ten key factors that promoted change in their medical college's curriculum and 12 obstacles or barriers to change were also identified through interactive discussions and field visits. These initiatives and findings are reported in this paper.

Introduction

Medical education and its social and community-orientation have been the subject of discussion and dialogue in India since independence. All the key expert committees that were constituted by the Government to suggest reforms and new directions in medical education have stressed social and community-orientation. The Bhore Committee in 1946 (CBHI/DGHS/MHFW-GOI, 1985) endorsed the need for a "social physician"; the Mudaliar Report, 1961 (CBHI/DGHS/MHFW-GOI, 1985) encouraged the training of "general practitioners"; the Patel Report (1970) defined the "Basic Doctor"; the Srivastava Report (1975) exhorted educators to help in training the "family/community-oriented general practitioner with social responsibility", the ICSSR-ICMR Health for All report (ICSSR/ICMR, 1981) set as the goal the production of the "community-oriented physician for comprehensive health care; and finally, the Draft National Educational Policy for Health Sciences, 1989 (Bajaj, 1991) has re-emphasised the training of the "community physician". The challenge in the last four decades has been to operationalise the shift towards these goals in orthodox medical education.

Requests for reprints should be sent to R. Narayan, Society for Community Health Awareness, Research and Action, 326, Fifth Main, First Block, Koramangala, Bangalore 560 034, Karnataka State, India.

Until 1975 there had been much rhetoric and many exhortations at national medical education conferences. However, only in the last fifteen years, since the Srivastava Report (1975), have we witnessed a growing spirit of introspection and an increasing commitment towards serious reorientation of the curriculum and the development of a wide range of ideas and training programmes that are more suited to our own needs and socio-cultural realities.

Background to the Study

The first premise of our interactive study was that there are at least four sectors of innovation from which stimulus for reform in medical education and ideas for the development of an alternative track or an experimental new curriculum can emerge.

i) **The expert sector**. As mentioned above, there have been a series of expert committees which offered goals and recommendations of great relevance to the situation in India.

ii) **The Medical College Sector.** Some medical colleges have made serious efforts to operationalise some of these goals and recommendations and some have gone further to evolve strategies for community training. Much of this reform has had to be within the framework of structure, function and pattern of examinations stipulated by the Medical Council of India.

The Medical College sector includes ideas and recommendations put forward by professional associations at their annual meetings. It also covers many of the ideas discussed at the annual meetings of the Indian Association for the Advancement of Medical Education.

The expert sector and the Medical College Sector together constitute what we term "traditional/orthodox expertise".

iii) **The Voluntary Training Sector.** Since the 1970's a large number of innovative training programmes has developed within the voluntary/non-governmental sector. Many are geared to training or reorientating doctors and nurses towards community health centred work. Many others train lay people in community health work. A large number of alternative training experiments have also emerged in the informal education sector. While these may appear to have developed quite separately, there is growing recognition that their pedagogical innovation has great significance for professional education.

iv) **The Primary Health Care (PHC) Graduate Sector.** There are a large number of young graduates who work in small peripheral rural hospitals, primary health centres and community health projects, who have had to adapt their inadequate education to the professional challenges and emotional demands of community health care. Most of these creative tensions, appropriate responses and ideas are waiting to be systematically tapped and explored.

The Voluntary training sector and the PHC graduate sector together constitute, what we term "alternative" expertise.

The second premise of our interactive study was that while the above sectors of innovation have a lot of interesting ideas to offer, there is inadequate documentation and reporting and inadequate networking. This expertise is thus relatively unknown within and between sectors. Medical colleges know little of what each other is doing. The voluntary sector trainers have little dialogue among themselves. The graduates working in the periphery are seldom contacted for feedback. There is, therefore, a gross lack of awareness of the wealth of experience available within the country. This is further accentuated by the fact that experts in medical education and policy makers are unaware of the diversity and multifaceted experience in the country and tend to get carried away by ideas and expert advice that have originated in other countries and in situations of different socio-economic cultural conditions and in different educational systems.

The third premise of our study is that innovators within and outside the system have not subjected their own innovations or reflections to any really objective evaluation and/or peer group assessment. In some instances, where this may have been attempted, the results are not available for others to reflect upon.

Objectives of the Study

With these premises in mind, the study, initiated in April 1990, had the following objectives.

i) To document descriptively and analytically the recommendations, key experiments, innovations and experiences in appropriate medical education in India, focusing especially on the most recent two decades.

ii) To build an anthology of ideas from a sample of recent medical graduates who have worked in peripheral rural hospitals and community health projects in India (PHIs).

iii) To review key alternative training experiments, in order to identify issues, perspectives, ideas and pedagogical innovations relevant to appropriate medical education in India.

The results would be made available as a resource book for all those interested in exploring reform in the 1990's.

Methods

The study was based on a multipronged approach which involved both orthodox and interactive approaches. The *orthodox approaches* included:

Literature review;

A Survey of Medical College by letter with two reminders to all medical college Deans, Principals and Professors of Preventive and Social Medicine (PSM);

Letter with reminders to a selected group of Community Health and Development trainers;

A questionnaire survey with graduates of the 1980's and with at least two years "PHC" experience (Narayan and Narayan, 1994).

The *interactive approaches* included:
Peer group correspondence and meetings;
Field visits to some colleges and group discussions with teachers and interns at these colleges;
Corresponding with medical college respondents and community health trainers;
Dialogue with medical educators and trainers at workshops.

Key Findings from the Medical College Survey

25 colleges responded to the survey, and seven others were identified through the literature survey, a sample of 32 out of 125 colleges in India (23.6%).

Strategies for reorientation (Tables I-VI). Fifty strategies were identified which can be broadly classified under:

Educational technology; improving pedagogy of medical education by clarifying objectives, goals, methods at institutional and departmental levels and improving skills of staff in modern educational techniques.

Widening horizons; introducing new topics, concepts and perspectives as sub-units of existing subjects or as additional subjects.

Improving skills development; by providing more time for in-service training, including graded responsibilities in actual procedures for skills development.

Moving outside the teaching hospital; exploring greater community-based learning opportunities, including experiences at different levels of health care (primarily at Primary Health Care level and the periphery).

Transcending compartmentalization; introducing integration of subjects and phases of medical education, and including problem-based learning. These also included foundation/orientation experiences that help to link different aspects of teaching.

Promoting self-directed learning; improving opportunities for students to make their own decisions and to explore new areas independently, even outside the curriculum.

These strategies collectively represent an evolving alternative medical curriculum framework symbolising the Indian experience towards social relevance and community-orientation.

Pacesetters

The survey and literature review identified six colleges that could be considered forerunners or pacesetters in community-oriented strategies. They had large enough numbers of innovations and a relatively sustained process of reorientation in their programmes. The reasons for their sustained commitment to both quality and reform arose from a combination of factors which included:

Specific/focused mandate; smaller number of admissions (50-70); autonomous or private management; own entrance examinations and selection procedures; adequate teaching hospital beds; well organised rural and urban field practice areas; and commitment to community-oriented/community-based programmes.

Table I. Improving pedagogy

INSTITUTIONAL/INSTRUCTIONAL OBJECTIVES
MEDICAL EDUCATION GROUP/FACULTY TRAINING
SELECTION PROCEDURES
CURRICULUM DEVELOPMENT/INTEGRATION
REFORM OF EXAMINATION TUTORIAL SYSTEM
CONTINUING MEDICAL EDUCATION
INTERNSHIP ASSESSMENT/EVALUATION
FACULTY - STUDENT FEEDBACK RESEARCH

Table II. Widening horizons

BEHAVIOURAL SCIENCES
BIOSTATISTICS
CLINICAL PHARMACOLOGY/RATIONAL THERAPEUTICS
ETHICS
EMERGENCY MEDICINE
EPIDEMIOLOGY IN COMMUNITY/CLINICAL MEDICINE
FIRST AID/NURSING SKILLS
HEATLH EDUCATION/COMMUNICATION
HEALTH MANAGEMENT/ECONOMICS
SOCIAL OBSTETRICS/SOCIAL PAEDIATRICS

All these colleges had tried out or introduced anywhere between 10-20 of the 50 strategies. However, each could have introduced many additional ideas.

The field visits to the seven colleges, and informal discussions with teachers and interns identified key factors that promoted change, as well as major obstacles and barriers to change. These are summarised on the next pages.

Table III. Improving skills development

STUDENT NURTURING PROGRAMMES

CARING AS WELL AS CURING - INTERPERSONAL SKILLS

JUNIOR CLINICAL CLERKSHIP (COMMUNITY)

SENIOR CLINICAL CLERKSHIP (COMMUNITY)

GENERAL PRACTICE UNIT

CLINICAL CLERKSHIP IN PRIMARY CLINICAL DEPARTMENTS

PERIPHERAL HOSPITAL POSTINGS

COMMUNITY BASED CAMPS/CLINICS

INVOLVEMENT OF INTERNS IN TRAINING HEALTH WORKERS

Table IV. Moving beyond the teaching hospital

COMMUNITY ORIENTATION CAMPS (PRE-CLINICAL LEVEL)

in rural areas / urban slums

COMMUNITY BASED FAMILY CARE PROGRAMMES

COMMUNITY BLOCK POSTING - (FIRST CLINICAL YEAR)

COMMUNITY BLOCK POSTING - (SECOND CLINICAL YEAR)

EPIDEMIOLOGICAL / PUBLIC HEALTH PROJECTS

MOBILE CLINICS SCHEME FOR TRAINING

COMMUNITY POSTING IN ROTATING INTERNSHIP

INTER POSTING TO GOVERNMENT HEALTH CENTRES / SUB-CENTRES

COMMUNITY BASED CAMPS BY CLINICAL DEPARTMENTS

Factors Promoting Change

Institutional Mandate. An institutional mandate and charisma towards social relevance and community-orientation characterised by management commitment to primary health care, peripheral rural hospital service, general practice and community health.

Table V. Transcending compartmentalisation

FOUNDATION COURSE FOR NEW STUDENTS
CLINICAL ORIENTATION IN THE PRE-CLINICAL PHASE
HUMANISING PRE-CLINICAL PRACTICALS
PARACLINICAL TEACHING - SYNCHRONISATION / INTEGRATION
CURATIVE / PREVENTIVE GENERAL PRACTICE UNIT
INTERN ORIENTATION PROGRAMME

Table VI. Promoting self-directed learning

ELECTIVES FOR STUDENTS
STUDENT INVOLVEMENT IN RESEARCH
STUDENT / INTERN VOLUNTEERS FOR SPECIAL SITUATIONS:

I Disaster Relief
II Control of Epidemics
III NGO Health Projects
IV Care of Plantation Workers
V Immunisation Programmes
VI Motivation for Family Planning

RURAL PLACEMENT SCHEME (Post Internship)

Institutional Objectives. The availability of defined institutional objectives, in the context of the mandate, were a great stimulus, to keep the management as well as faculty of all departments, aware of their focus and commitment to change.

Instructional Objectives. The evolution of instructional objectives at departmental level, keeping the overall mandate in context, helped teachers and ensured that the students would experience the philosophical commitment of the institution at the curricular level.

Medical Educational Group. The presence of a critical mass of enthusiastic teachers in a formal relationship with a medical education unit, provided a collective effort and established continuity in the process of change.

Staff Development Process. The presence of a planned process of Staff Development through workshops and training programmes to create models, who are professionally competent, socially relevant, community-oriented and educationally alive seemed crucial.

Field Practice Areas. Development of field practice areas and links with the health services outside the teaching hospital - a teaching community, where viable, efficient and realistic community health and development service activities take place, were also a crucial requirement for change.

Institutional Policy Supporting Community Health. Development of an institutional policy of staff development and promotion which was focused towards community health was very helpful. This meant that staff were encouraged and enabled to gain greater experience, involvement and expertise in community health care.

Cultural Transformation and Value Orientation. A conscious value orientation and cultural transformation in institutional ethos, commitment of management staff and student values and aspirations, with increasing institutional commitment to social justice issues and societal/national needs seemed a key factor. This had to be brought about through informal processes of dicussion, dialogue, and reinforced by staff and management precept.

Networking and Dialogue. A commitment to networking and dialogue with a wide range of experimenters and innovators within and outside the formal medical college system helped the academic environment to be stimulated and cross-fertilised by the evolving wealth of Indian grassroots experience. There was a need to move towards a College of Medical Education without walls, in its true philosophical sense.

Reflective Evaluation. A commitment to concurrent, reflective evaluation of the change process seemed crucial as well. All changes needed to be subjected to review through regular teacher and student feedback and participatory evaluation.
Among all the pacesetter colleges, we found that the first six factors had been operative. While the last four factors had been focused upon occasionally they had not received adequate long term commitment.

Obstacles/Barriers to Change

Each obstacle has been given a clinical label to emphasize the key aspect of the pathology. *Mental dis-orientation.* Confusion between excellence/relevance; *Nystagmus.* Continuous shift between tertiary and primary care; *Optic Atrophy.* Reduced field of vision and orientation; *Anaemia.* Weak individual/isolated responses to reform; *Cancer.* Effect of market economy on value orientation; *Manic Depressive Psychosis.* Too much planning - too little follow up; *Atopy.* Allergy of students/teachers to community exposures; *Atherosclerosis.* Routine effort, affecting creativity; *Schizophrenia.* Clinical/Community Medicine dialectics; *Graft Rejection.* Unsuccessful transplants of foreign ideas; *Autism.* Staff withdrawal due to cynicism/fatigue; and *Senile Dementia.* Status quo/lack of openness to change in top leadership.

Each of these pathologies had an insidious effect on the health of the medical education reorientation effort. Therefore much will depend on the clinical acumen of medical college leadership in keeping the pathologies from getting into the college educational planning system. As in clinical medicine, prevention will prove better and cheaper than cure.

Disturbing Trends

The study, discussions and field visits were focused on positive aspects of Indian experience. However, some negative trends in India, which emerged in the 1980's, were also noted.

The growth of capitation free colleges (offering seats for money, not merit); the mushrooming of institutions based on caste and communal affiliations; the increasing privatisation and commercialisation of health care; the mushrooming of private high technology diagnostic centres and the concurrent glorification of high technology, through high pressure advertising in the media; the unresolved and probably increasing problem of private practice among full-time teachers in medical colleges; and the growing doctor-drug producer axis with vested interest in the abundance of ill health.

Rampant corruption, which seemed to be accepted as routine practice, and the increasing erosion of norms of medical ethics with resulting increase in medical malpractice;

The overall preoccupation of medical teachers with illness care in tertiary care centres, and the disregard of primary health/community health care needs.

Taken together, these trends are having a definite eroding effect on efforts to change the focus of medical education towards social/community orientation. This growing tension between enthusiasm for social relevance and community-orientation versus the glamour of high technology tertiary care and commercialisation/privatisation of medicine will be the scenario in which the alternative track in India has to develop. The challenges are obvious.

Conclusion

The study has brought together through various methods an overview of the Indian medical college experience to help medical educators to evolve a process of change with locally evolved inititatives in mind. Some factors, both positive and negative, that affect the change process, have been identified. This paper highlights only some of the key findings. The feedback from graduates in peripheral health institutions and experience has been presented in a separate paper (Narayan and Narayan, 1994).

More detailed findings from the survey and ideas from the other sectors are reported in a further series of publications that will be used to lobby for an alternative track/experimental curriculum in India. (Narayan et al., 1993; Narayan and Narayan, 1993).

Acknowledgements

The authors wish to acknowledge the Christian Medical Association of India, New Delhi and the Catholic Hospital Association of India, Secunderabad for sponsoring and supporting the study. Grateful acknowledgement is also made to all the medical colleges that responded to the survey, particularly all the teachers and interns who shared their views during the field visits and discussions. The unstinted support of the project Advisory Committee and of the Community Health Cell team of the Society is also gratefully acknowledged.

References

Bajaj, J.S. (1991). National education policy in health sciences. *Indian Journal of Medical Education, 29, (1 & 2),* 35-55.

CBHI/DGHS/MFW - GOI (1985). *Compendium of recommendations of various committes on Health Development - 1943-1975.* New Delhi, India: Central Bureau of Health Intelligence, DGHS, Ministry of Health and Family welfare, GOI.

ICSSR/ICMR (1981). *Health for All: An alternative strategy* ICSSR/ICMR Study group report. Indian Institute of Education, Pune.

Narayan, R., Narayan, T., & Tekur, S.P. (1993). *Strategies for social relevance and community-orientation in medical education: Building on the Indian experience.* Report of an Interactive Research Project. Bangalore, India: Society for Community Health Awareness, Research and Action.

Narayan, T., & Narayan, R. (1993). Graduate feedback on medical education: Based on experience in peripheral health institutions Report of a Study. Bangalore, India: Society for Community Health Awareness, Research and Action.

Narayan, T., & Narayan, R. (1994). Change in medical curricula through feedback from graduates with experience in peripheral health institutions. *Annals of Community-Oriented Education, 7,* 27-34. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Srivastav, J.B. (1975). *Health services and medical education: A programme for immediate action.* Report of the group on medical education and support manpower. New Delhi, India: Ministry of Health and Family Planning, Government of India.

Complementary reports

A faculty resource book on social relevance and community-orientation (1993).
Stimulus for change. An annotated bibliography (1993).
The key to change. A summary (1993).

Annals of Community-Oriented Education
1994, Vol. 7, 21-26

The New Social Mandate for Medical Schools

Robert F. Maudsley
Queen's University
Kingston, Ontario, Canada

Abstract

The new social mandate is here related to the medical school's responsibilities to its geopolitical community, its community of students and teachers, the community of research and scholarship and the wider community of health. This discussion leads on to considerations of the need to create an appropriately enabling environment for the necessary change to be implemented.

The new social mandate is that the content and context of a medical school's mission and its core activities be in synchrony with the context of the communities it serves. The societal context is in a state of constant change: society is increasingly interested in health promotion and disease prevention, care as well as cure, and healthy communities as well as healthy individuals. The context of medicine and the practice of medicine are changing too, with remarkable advances in science and technology.

The content of medical education, the knowledge and skills acquired and the professional attitudes developed and nurtured, are developed within the context, or environment, within which medical education takes place (Fig.1). In the new social mandate, the content and the context of medical education must be responsive to, and in harmony with the contemporary and anticipated future practice of medicine within the societal context.

There is a need to preserve and enhance the biomedical foundations of medical science in our education and research programmes. However, we need to broaden the content and context of our education and research to include community and population perspectives.

A medical school serves several communities. It is with reference to the context of these communities that the new social mandate of the medical school is here discussed. These communities include the geopolitical community, the community of students and teachers, the community of researchers and scholars, and the community of health professionals.

The Geopolitical Community

Medical schools must establish better links with the communities they serve. Medical schools, in collaboration with various health agencies in the broader community, must

---

Request for reprints should be sent to R. Maudsley, Queen's University, Faculty of Medicine, Kingston, Ontario, Canada K7L 3N6.

strive to define the health needs of their community. Medical schools need to establish links with smaller and rural communities with respect to sites for clinical education and research, continuing medical education, support of medical care, and, possibly, a more active role in the provision of health care to these communities. The medical school will continue to serve the community of patients but it will need to address in particular special communities such as the poor, the disabled, and the elderly, in terms of education, research, and service. Increased community involvement, both active and advisory, should be encouraged, especially in such areas as the admissions process, curriculum design, and delineation of the school's mission. Medical schools may take on broader roles in the provision of clinical care, either directly or in collaboration with other institutions and agencies. This active involvement will be necessary to enhance the context of the clinical experience for students. In this way, the local and extended community will be better served by graduates who are appropriately prepared to provide care in the context of community requirements, whether that be the urban core, medium-sized communities, or rural and remote areas - each with their own special needs and expectations. In serving these broader community requirements, medical schools will need to engage in more active collaboration with governments and other agencies to ensure an appropriate number, mix, and location of physicians.

Should the medical school itself engage actively in promoting change in the community with respect to social and political issues as they relate to matters of health care? As Eisenberg has noted (1988) "Unless we put as much energy into the effort to change the social context in which our graduates will practice as we do into curriculum reform, we will have betrayed the very principles we profess". Active involvement in public policy discussions about health care reform, the allocation of public resources to health care in comparison with other pressing social needs, the changing professional role of the physician from advocate to allocator of scarce resources, the role of advanced technology, major bioethical issues, the financing of medical care and physician reimbursement, and a healthy environment and healthy workplace are legitimate aspects of the social mandate of medical schools.

The Community of Students and Teachers

The content of the curriculum must provide a sound scientific base for the practice of medicine. It must also prepare students to engage their communities within the context of health care and social needs. The task falls primarily to teachers, but students also have an active role to play in curriculum design and content, in order for the curriculum to be as responsive and relevant as possible.

The use of mortality and morbidity data, data about the burden of illness, and social issues which impact on a community's health status should be of considerable help to faculty members in selecting priority issues and problems that form the basis of curriculum content.

The medical school needs to serve its students by selecting and using teaching and learning methods that enhance student learning and involvement. Strategies to prepare our community of students for a rapidly and constantly changing context of medical practice must be incorporated into the medical school. Student-centred learning, in which greater responsibility is given to students to determine their own learning needs under the guidance of their teachers, serves to prepare the community of students to adapt their learning throughout their professional careers. Learning methods such as problem-based learning, either as the sole method of learning or in combination with a more structured approach of instruction, need to be promoted, in order to best serve the community of students. Students must be given sufficient opportunity to have clinical experiences that provide a wide range of community-based activities, in order to put the content of their studies in an appropriate context.

Medical schools must recruit and train teachers who are committed to a broader interpretation of medical education and medicine's role in meeting the health care needs of the community. This cadre of teachers will not only serve its community of students but will also serve the research and clinical-care needs of the extended community, both directly and through their influence on students and others.

The medical school's mandate to serve its teachers must embrace a broader definition of "success" in terms of the criteria for academic recognition and promotion. Those who spend a great deal of time and effort in teaching, curriculum design, development of learning materials, supervision of clinical education, and collaborative work in the community must be recognised appropriately and rewarded, as are those who pursue more traditional roles in scholarship and research. It is not a case of one model at the expense of another, but one of establishing a better balance, a broader perspective of the roles and responsibility of faculty members in meeting the medical school's social mandate.

We need to serve our community of students by instilling in them the concepts of caring for individuals, attending to the patient's subjective feelings and experiences of illness, the impact of illness on their family and livelihood, their special place in the community, as well as, and distinct from the pathophysiological processes and facts of disease. Students must learn from their experiences to distinguish between disease and illness. Physicians have been taught to conceptualise disease as abnormalities in the structure and function of organs and tissues; but the patient suffers illness, that is, changes in state and social function (Eisenberg, 1988). Student learning must, therefore, encompass not only the care of a broad range of patients with various diseases and disabilities but also an understanding of the broader community context in which these patients live and function. In order to achieve this broader experience, a good part of which may occur outside a teaching hospital, it will be necessary to redefine the medical school's commitment to providing appropriate teaching and experiences to its medical students.

The Community of Research and Scholarship

Academic medicine, over the past several decades, has distinguished itself and served its communities well by numerous major, and, in some instances, breathtaking advances in medical research and technology. In recognition of the importance of basic and applied biomedical research to the cure or alleviation of diseases and suffering, research and development has by and large been generously supported.

The new social mandate for medical schools must include an increased emphasis on scholarship and research in areas of population health, health determinants, health care delivery and financing, clinical guidelines, disease screening, disease prevention, and health-promotion strategies. This new emphasis should and can be accommodated without great harm to basic and biomedical research, although it may well be that some funding may need to be redirected as a priority to these broader, population-based research areas.

The Community of Health Professionals

Although there has been discussion over the past two or three decades about the desirability of constructing medical school curricula and clinical experiences to encompass joint learning with several of the health professions, not much progress has been made. In some jurisdictions, the concept of the multidisciplinary health care team is a reality, both in hospital and community settings. However, in too many medical schools, logistical problems and attitudinal barriers have impeded attainment of a more integrated educational approach to multidisciplinary learning, experience, and practice. In part, the impediments may be due to the changing roles of physicians, nurses, therapists, and other health care providers. Can the medical school, in collaboration with other professional schools and professional societies, work to define more clearly their respective roles and expectations in a contemporary society? Certainly, shared educational opportunities are important in bringing together health-professional students. However, until some of the major issues of professional roles and autonomy are discussed in an open, enlightened environment, many students and faculty members will find it difficult to make a significant commitment to this educational concept. Despite initial skepticism and misgivings on the part of other health professions, the medical school can serve the community of health professionals by acting as a catalyst to further these vital discussions in a cooperative and forthright manner. All our communities will be well served by such discussions.

Environment for Change

The changes necessary for medical schools to meet their new social mandate may be looked at from the perspective of attitudes, process, and resources for change.

In dealing with change, we tend to focus on the resources necessary and on the process and often ignore or only timidly recognize attitudinal problems, which, if not addressed and resolved, will subvert fundamental and lasting change. The process of changing the medical school mandate requires efforts similar to those needed for changing individual behaviour. This requires creating an awareness of the need for change, providing support for those experiencing change, and fostering solidarity among those involved in similar change dynamics to lessen the possibility of a return to previous behaviour (World Health Organization, 1991).

What is the major attitudinal change that is required? It is that of becoming more aware of, and responsive to the educational and societal context in which contemporary medicine is learned and practised.

The process of change in medical schools must occur at all levels, from the individual faculty member and student, to departments and medical school leaders, to local and national organizations. These changes will require strong leadership within medical schools and also a substantial effort in faculty development programmes, in order that the necessary changes be accepted and incorporated into the various activities of the medical school. It will take a particular effort on the part of medical school leaders to obtain and maintain the commitment of teachers, students, groups, and organizations to these changes. It must be emphasized to students that change is the constant, in terms of the content of medical knowledge, as well as the modes of delivery of health care to both individuals and communities. Students need to experience the change process. Some strategies to achieve this include active involvement in changes in medical education, and specific community elective experiences that have an element of change as the focus, as well as involvement as observers or participants when discussions occur about changes in health care in institutions, communities, and governments. Appropriate recognition and reward of faculty members will be essential to maintain the level of involvement and commitment, in order to effect the significant change required to meet the new social mandate of the medical school.

There may be few, if any, new resources available to medical schools as they embark on significant change. However, efforts should continue to be made to acquire appropriate funding for medical schools, in order that they may meet their new and broader social mandate. Medical education and research are not frills of health care, they are integral to a health care system and every bit as important as the delivery of health care itself (Sammons, 1990). Although the cost of supporting medical schools represents only a small portion of health care expenditure, the preparation of new physicians and support of medical research determines to a great extent how physicians will practise and what resources they will use in their work (Josiah Macy, 1992). Reallocation of institutional and other funds may be required to support the necessary changes. Because of these limitations, it is essential that leaders in medical school be very clear about their goals within the new mandate for their medical schools and that they communicate their vision and plans in an explicit, clear, and concise fashion to politicians, planners, other health care professions, their academic colleagues and students, and above all to the public - who are our patients and who often are and certainly can be our most avid supporters for change.

This then is the challenge of the new social mandate of medical schools: content in context. Medicine must be taught, learned, and practiced in what has always been its context: people and communities.

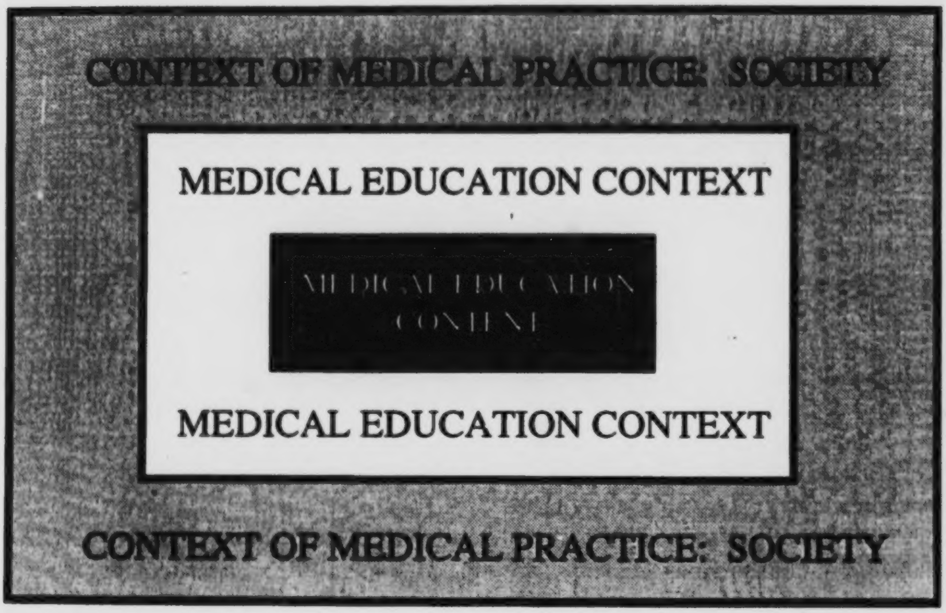

CONTEXT OF MEDICAL PRACTICE: SOCIETY
MEDICAL EDUCATION CONTEXT
MEDICAL EDUCATION CONTENT
MEDICAL EDUCATION CONTEXT
CONTEXT OF MEDICAL PRACTICE: SOCIETY

Figure 1. The content and context of medical education.

Acknowledgement

I am indebted to Mary K. Maudsley for her advice and editorial work in the preparation of this article.

References

Eisenberg, L. (1988). Science in medicine: Too much or too limited in scope? In: K.L. White (Ed.). *The task of medicine.* Menlo Park, Ca: The Henry J. Kaiser Family Foundation.

Josiah Macy, Jr. Foundation. (1992). *Taking charge of graduate medical education: To meet the nation's needs in the 21st century.* In conference summary. New York, NY: Josiah Macy, Jr. Foundation.

Sammons, J.H. (1990). In: I. Singer (Ed.). *Clinical education in a changing health care system: Who pays?* Chicago, IL: American Medical Association.

World Health Organization. (1991). *Changing medical education: An agenda for action.* Geneva, Switzerland: World Health Organization.

Annals of Community-Oriented Education
1994, Vol. 7, 27-34

Change in Medical Curricula through Feedback from Graduates with Experience in Peripheral Health Institutions

T. Narayan and R. Narayan
Society for Community Health Awareness, Research and Action
Bangalore, India

Abstract

As part of an interactive, multipronged, research project, to build on India's experience in strategies for social relevance and community orientation in medical education, a graduate feedback survey was organised that collected ideas from 53 young graduates who graduated in the 1980s and spent at least 2 years in a peripheral health institution or primary health care setting. The feedback was on 37 different aspects of medical education which included all the pre-clinical, para-clinical and clinical subjects and on issues such as selection process, teaching methods, curriculum structure, examination system, internship training, and measures to enhance social/emotional preparedness for Community Health work. The paper summarizes the key findings of the survey.

Introduction

Since national Independence (1947), it has been the stated intention of national expert committees, professional bodies, and some medical colleges to mould medical education to suit the needs and circumstances of the majority of the population in India.

A study undertaken by the Community Health Cell of Bangalore (Narayan and Narayan, 1993) reviewed the past four decades of Indian experience in evolving and implementing strategies to make medical education socially relevant and community orientated. Part of this study elicited feedback from medical graduates with work experience in peripheral health institutions (PHIs). Their opinion on the adequacy of the undergraduate medical curriculum as preparation for professional work in the PHIs was obtained. This was an exploratory study, using an open-ended approach, to identify broad areas that could be studied subsequently in greater detail as part of a process of evolving relevant curricular change. The enquiry was an effort to link up experience in the peripheral health services with the system of medical education.

The objectives of the enquiry, in the context of medical practice in PHIs in India were:

- to elicit feedback from graduates with PHI experience on all the major aspects of the undergraduate medical course;
- to identify in the undergraduate medical curriculum,
  areas that were useful, relevant and adequate; areas that needed further strengthening; areas of deficiencies; areas that could be reduced or deleted.

Requests for reprints should be sent to T. Narayan, Society for Community Health Awareness, Research and Action, 326 V Main, I Block, Koramangala, Bangalore-560034, Karnataka, India.

Method

A self-administered, pretested questionnaire was used to elicit feedback on thirty-seven aspects of medical education: all pre-clinical, para-clinical and clinical subjects; internship and medical ethics; additional skills in patient care like nursing, management, communication and training; selection/admission procedures, teaching methodology/paedagogy, curriculum structure, examination system, and suggestions for social/emotional preparedness for PHI work. Information was collected to build a profile of the respondents' work experience.

The sample was based on specific criteria: graduation from Indian medical colleges during the 1980s; a minimum of two years' working experience in PHIs in India. This included work in Government Primary Health Centres or in community health programmes/small peripheral hospitals run by voluntary organisations. This would ensure first hand experience of the health and needs of people in rural areas and urban slums, and sufficient time to put their knowledge and skills to use in these circumstances. Anonymity of individual respondents and medical colleges was maintained.

The questionnaire was distributed to 78 eligible respondents by the authors at examination centres and other meetings. One reminder was sent after a period of a month. Fifty-three graduates responded, a 67.9 percent response rate.

Year of graduation. The majority of respondents graduated in the 1980s. The feedback, therefore, relates to current practices in medical education (Table I).

Years of work experience in PHIs. The average duration of work experience per respondent was 2 years 10 months. There was a range, with most of them having worked for 24-28 months and some for 36-42 months.

Geographical location of the PHIs. Respondents had worked in a total of 80 PHIs located in 10 States of India and 1 Union Territory. Several graduates had worked in more than one PHI. The majority of the PHIs (> 90%) were located in rural areas.

Nature and size of PHIs. Most of the experience of the respondents had been at the level of providing secondary level medical care. However, they had often been involved - sometimes in the same institution - in primary care as well. Table II indicates that the majority of PHIs had fewer than 50 beds.

Departments in the PHIs. As shown in Table III, 65 percent of the respondents worked in PHIs with one or two Departments (mainly General and Obstetrics and Gynaecology) which had to take care of all problems. PHIs with more than three Departments had additional doctors who were more experienced or with postgraduate qualifications.

Number of doctors in the PHIs. Details, including the respondents, are given in Table IV.

Work profile. An average of 25 outpatients per day were seen. The majority of respondents had carried out or supervised and interpreted simple laboratoy investigations and plain radiographs independently. Three percent of PHIs had community health programmes. In 60 percent the neares referral facility was more than 12 Km away.

Table I. Year of graduation

Year	No. of respondents	
1970s	2	(3%)
1980-84	21	(40%)
1985-88	30	(57%)
Total	53	

Table II. Bed strength of PHIs

Bed strength	No. of PHIs	
Less than 50 beds	52	(65%0
51-100 beds	16	(20%)
More than 101 beds	12	(15%)
Total	80	

Table III. Number of departments per PHI

No. of Departments	No. of PHIs		Comments
No Departments	2	(3%)	Community health programme
1 Department	41	(51%)	Mainly general
2 Departments	11	(14%)	Various combinations of general medicine, obstetrics and gynaecology, surgery, paediatrics
3 Departments	11	(14%)	
4 Departments	6	(7.5%)	
5 Departments	1	(1%)	
6-10 Department	7	(8.7%)	
More than 11 Departments	1	(1%)	
Total	80		

Table IV. Number of doctors per PHI

No. of Doctors/PHI	No. of PHIs	
One	23	(29%)*
Two	16	(20%)
Three	15	(19%)
4-6	11	(14%)
More than 6	15	(19%)
Total	80	

NB: * The respondents functioned as single doctors

Results

A detailed report of the findings has been published (Narayan and Narayan, 1993). The key findings are given below.

Skills development. There was a strongly expressed need for greater development of skills and competences, particularly in basic nursing procedures; emergency medicine; minor surgical procedures; obstetrical care; local anaesthesia; running a simple laboratory and pharmacy; assessing community health needs and evolving simple strategies to meet them; training health workers; management; communication.

Curriculum change. Major suggestions were:
-introduce integrated teaching with special focus on clinical application, and on common problems;
-reduce unnecessary theoretical details;
-reduce pre-clinical phase (during which primarily Anatomy, Physiology and Biochemistry are taught) from 1 1/2 years to 1 year;

- introduce/strengthen the teaching of psychology and sociology and experience in basic nursing procedures during the six months thus gained in the first eighteen months;
- increase responsibility and decision-making capacity during clinical work;
- emphasize the four primary clinical disciplines, especially obstetrics;
- change the concept that "short postings" are relatively unimportant;
- during final year or internship there should be postings to the pathology laboratory, blood bank, pharmacy, medical records department and accounts section;
- during final year or internship there should be an involvement in the training of other health workers.

Community health. Suggestions included:

- integrate preventive and curative aspects in all phases/disciplines;
- emphasize community health teaching with practical training in health education, nutrition, school health, epidemiology, statistics, and occupational health;
- ensure involvement in ongoing community health programmes during studentship/ internship;
- increase teaching programmes that are community-based, including exposure to PHIs;
- internship should include postings to PHIs.

The Examination System received many observations. Several respondents felt that the system was subjective, unreliable, outdated, irrelevant to actual medical practice, and even unethical and corrupt.

They suggested that there was a need to focus on:

- assessing basic, necessary knowledge and skill;
- the logical approach to diagnosis and rational treatment;
- with stress on common problems.

There was also a need to change methods of assessment to:

- a process of continuous assessment;
- increased use of MCQs;
- several short cases with discussion.

Other key suggestions included:

- career guidance to enhance/promote and support students' option for work in PHIs;
- sharing of experience by PHI doctors with students during the undergraduate medical course;
- internship, as the most useful learning phase, needed to be strengthened;
- introductory lectures on alternative systems of medicine, holistic health and traditional health practices;
- development of healthy attitudes, lifestyles, values and ethics during the undergraduate course.

Discussion and Conclusions

Many suggestions offered by the graduates demanded increased time and greater commitment on the part of the academic staff, along with requiring that the students be responsible adult learners. Besides being clinicians, academics should primarily be teachers, nurturing the growth of their students. This calls for a major shift in the traditional roles of students and teachers.

Tertiary care teaching hospitals are not the most suitable location for training doctors who are expected to function at the secondary level of care. Efforts should be made to move at least a part of the teaching to District Hospitals, Primary Health Centres and voluntary/ mission hospitals. The facilities in those institutions may have to be strengthened, so that the students can be given a positive learning experience. The present postings of students and interns to these centres have often been done without adequate preparation and have not always been effective. Badly planned postings contribute to putting students off such work permanently.

It was obvious from the findings of the overall study (Narayan and Narayan, 1993) that there are differences between colleges which may also reflect differences between requirements of different universities. For example, some subjects like Psychology, Sociology and even Psychiatry, Dentistry, are not taught in some colleges. Other medical schools, however, have not found the Medical Council of India guidelines or those of their university a hindrance in introducing additional areas like medical ethics or altering their approach to teaching.

Given the time framework and competing demands by different disciplines, priorities for curriculum time and content need to be developed. Some key aspects and ideas that are important for practice in PHIs have emerged from this study:

- practical expertise in first aid and nursing procedures;
- "short postings", for example Orthopaedics, Dermatology, Radiology, ENT, Dentistry and Forensic Medicine, should be evaluated for their importance;
- ability to run a small laboratory, pharmacy, to record radiographs and to handle equipment;
- evaluate the importance of Psychology, Counselling and Sociology.

Several of the ideas that have emerged are not entirely new - some have been highlighted by expert committees and various conferences on medical education. Other studies with students and interns have identified similar suggestions (Bhatt et al., 1976; Clausen, 1973; Gupta and Patel, 1973; Rajanna et al., 1984; Ramalingaswami et al., 1980; Swain, 1978; Varma and Varma, 1970). General suggestions emphasized greater clinical orientation and skills development, need for integrated teaching, and need for reform of examinations. These needs for change have been endorsed by many groups and should be implemented urgently, effectively and creatively.

If rural service and work in peripheral health institutions or general practice are important, the responses from the graduates in the present study need to be considered seriously. It would also be useful to recruit individuals with such PHC experience for teaching in medical colleges and to serve on curriculum and medical education committees.

In our literature review the only other study that had used a somewhat similar sample was the one by Mohapatra et al. (1988) which investigated the level of knowledge of nutrition among Government PHC doctors. These authors pointed out the need for developing a link between the health services and the system of medical education. However, while they found a gross deficiency in knowledge of nutrition, they had not specifically elicit feedback on reforms in medical education.

During a workshop, organised by the authors in 1984 for graduates who had worked in rural areas (Mohan et al., 1984), the nineteen participants stated "*we feel strongly that the process leading to graduation should be so modified that, at the end of our five and a half years course, we are specifically equipped to work meaningfully in rural areas*". The main suggestions regarding the undergraduate course were:

a. During rural postings, students should actively assist interns during their work (e.g. helping with dressings, procedures, dispensing medicines).
b. During their clinical years, students should be entrusted with graded responsibility in patient management and "*should not remain mere spectators of the daily ward/OPD routine as at present*". Students should be given twenty-four hours postings in the ward, etc. During such asignments they should be exempted from lectures and classes.
c. Internship should be a "procedure- and competence - based programme: and, more importantly, it should "*promote the capacity for independent decision making*".

Another positive result of our study was the identification of areas that are adequate, those that need strengthening, and those which can be reduced (Narayan et al., 1993). This could be developed by further detailed studies using rating scales.

Conclusion

The restrictions of this study were the limited number of respondents; the use of open ended questions; and the fact that no G.Ps and only a few Government Primary Health Centre doctors were represented. Nevertheless, it is worth noting that:

- to change curricula with feedback from the field is useful and enriching;
- the identification of respondents with appropriate work experience is a key requirement, as they can relate the curriculum to the requirements of the working environment, be it rural health, general practice or primary health care;
- such enquiries are particularly important, as most academics have no experience in PHI

Acknowledgements

The authors wish to acknowledge the Christian Medical Association of India, New Delhi, and the Catholic Hospital Association of India, Secunderabad, for sponsoring and supporting the study, as well as all the young graduates who responded so enthusiastically and provided very useful, qualitative feedback on medical education in the context of their experience in PHI. The unstinting support of the project Advisory Committee and of the Community Health Cell team of the Society is also gratefully acknowledged.

References

Bhatt, R.V., Soni, J.M., & Patel, N.F. (1976). These twenty five years: Study of medical graduates from medical college, Baroda. *International Journal of Medical Education, 15(1)*, 33-46.

Clausen, R.W. (1973). Medical education relevant to society's needs. *International Journal of Medical Education, 12(1 & 2)*, 62-64.

Gupta, O.P., & Patel, D.D. (1973). A study of the socio-economic survey of medical students with special reference to motivation in the choice of medicine as a career in India. *International Journal of Medical Education, 12(3 & 4)*, 285-295.

Mohan, A., Menezes, L., Ravindran, G.D., Narayan, R., & Narayan, T. (1984). *Report of a workshop for pioneers of the rural placement scheme of St. John's Medical College, Bangalore, Mimeograph, Catholic Hospital Association of India, Secunderabad.*

Mohapatra, E., Ramdasmurthy, V., Ramnath, T., & Mohanram, M. (1988). Better education for better health care. *World Health Forum, 9*, 612-614.

Narayan, T., & Narayan, R. (1992). *Curriculum change: Building on graduate doctor feedback of peripheral health care experience.* An exploratory survey presented at XXXI Annual Conference of the Indian Association for the Advancement of Medical Education, Bombay, January 1992, Mimeograph, Community Health Cell, Society for Community Health Awareness, Reserach and Action, Bangalore.

Narayan, R., Narayan, T., & Tekur, S.P. (1993). *Strategies for social relevance and community orientation: Building on the Indian experience.* A medical education project report. Bangalore, India; Community Health Cell, Society for Community Health Awareness, Research and Action.

Narayan, T., & Narayan, R. (1993). *Evolving medical curriculum through graduate doctor feedback: Based on experience in peripheral health institutions.* Report of a study. Bangalore, India: Society for Community Health Awareness, Research and Action.

Rajanna, M.S., Shivaram, C., & Vastard, S.A. (1984). Evaluation of medical education form the students' point of view. *International Journal of Medical Education, 23*, 2-15.

Ramalingaswami, P., Shukla, S.K., & Jha, D.G. (1980). Team approach to primary care: Views of some students physicians. *International Jouranl of Medical Education, 19 (2)*, 78-81.

Swain, S. (1978). Students' perception of present day medical education: Their goal objectives and views on curriculum design. *International Journal of Medical Education, 17(2)*, 106-112.

Varma, S.P., & Varma, A.L. (1970). Curriculum structur: The students and teacher. *International Journal of Medical Education, 9*, 482-487.

Annals of Community-Oriented Education
1994, Vol. 7, 35-37

Retention of Physicians in Rural Areas: The Rural Polyclinic Concept

Angelo H. Manalo
Mindanao State University
Mindanao, The Philippines

Abstract

The paper discusses the need for enabling graduates of community-oriented and community-based medical curricula to practise what they were taught. It is suggested that grants be made available, for repayment over a long period and at a low rate of interest, for building and equipping health centre group practices. Details of staffing to serve populations of up to 30,000 people are included.

Maldistribution of physicians has been a perennial problem in most parts of the world. With the knowledge explosion and the trend towards specialisation and high technology medicine, most practitioners tend to gravitate towards urban medical centres where the necessary technology is available and where practice is more lucrative to pay for the high cost of medical education and to achieve the high standard of living which is expected of a physician.

To overcome this trend, the selection process of medical students has been revised to favour rural students, scholarships were given, community-based curricula were introduced to produce highly motivated, altruistic graduates who were expected to serve and practise in the rural areas from where they came. Most of these graduates went into the government departments of health which were the only ones employing physicians in rural areas.

While the schools did indeed produce well-motivated physicians, government health budgets failed to keep pace. Incentives and salaries of government physicians remained at low levels and government facilities failed to be upgraded even up to the minimum standards required by the physicians. Economic conditions in rural areas remained stagnant. Thus the problem of maldistribution and non-retention persisted.

To overcome this problem, the concept of group practice in a rural polyclinic was proposed. Here, a group of five physicians will be given a soft loan to construct a Rural Polyclinic consisting of doctor's offices, a dispensary, minor operating room, a delivery room, laboratory, pharmacy, X-ray room and two 10 to 15 bed wards for male and female

Requests for reprints should be sent to A. Manalo, Dean, Mindanao State University, College of Medicine, MSU-IIT Campus, Tibanga, Iligan City, Mindanao, The Philippines.

in-patients respectively. Dormitory facilities or apartments for staff and relatives of patients could also be built as additions to the Polyclinic.

The area to be served by the Polyclinic is envisioned to be a population, not yet served by a government facility, with a population of 25,000 to 30,000 people living within an area of up to 30 kilometre radius of the Polyclinic. It must be at least within one hour of the nearest secondary care facility which will serve as a referral facility for the Polyclinic. The group will organise self-help communities within their catchment areas, train health workers for satellite health centres and pharmacies and employ professional midwifes. These health centres will serve as primary first contact medical facilities and referral arms of the Polyclinic. Services to be provided by the primary care satellite clinics will be promotive and preventive, health education and counselling, immunisation and curative for common medical conditions. More difficult cases will be referred to the physician at the Polyclinic who will provide basic diagnostic and curative services. Cases needing more advanced health care facilities will be transported to the nearest secondary or tertiary care hospital.

Promotive and preventive health services will be funded by the local government unit on a contractual basis, while curative services will be on a fee for service basis or according to a health plan to be devised by the group of practitioners and their community. Personnel, such as nurses, midwives, nutritionists, clerks and drivers, will be paid by the group practice. They may invest in the polyclinic as a co-operative venture.

The clinic will in essence be a family practice to manage the more common adult medical and paediatric aliments, normal deliveries, recognise abnormal ones for referral, carry out minor surgical procedures and handle trauma casualties prior to their referral if deemed necessary. The doctors in the group can go back to the College of Medicine or other similar facility to undergo skills training to add to the competences that they already possess. They can keep improving and upgrading their facility to meet demands and may convert it to a secondary or even tertiary hospital as their area progresses. Thus they are not only health deliverers but community developers as well.

The physicians are, therefore, encouraged not only to pay back their scholarships with brief years of "service" after which they are allowed to leave, but to make the development of their communities and facilities a life-long endeavour with adequate economic compensation for their efforts.

Achievement of the Concept

The Philippines, a third world country, does not have the resources to fund a large number of such clinics. The graduate physicians come from low income families and do not have the resources to set these clinics up themselves. Banking institutions would need adequate collateral before they can lend money for such ventures which are largely untried and untested.

The hope is to turn to foreign institutions for grants and aid in funding the construction of these facilities. A polyclinic complete with dormitory facilities and equipment will cost about 20 million pesos (US $ 714,000). The local government unit would, it is hoped, donate the land. If the borrowers can be given a 5 year period of grace and 20 years to pay at minimal interest, the project would have a good chance of success, as the amortisation would be well within the reach of the Polyclinics' earnings.

Staff

In addition to the five physicians, the Polyclinic would need a staff of eight nurses, six nurse aides, four midwives, four clerks, one nutritionist, two cooks, four janitors, two drivers, two X-ray technicians and two laboratory technicians. They would be paid from the earnings of the Polyclinic. They could also invest in the clinic as a co-operative venture.

Conclusion

If such a facility were made available to groups of physicians soon after they graduated, their enthusiasm, excitement and energy could be harnessed and put to good use in the rural areas where they can plan to spend the rest of their lives.

Annals of Community-Oriented Education
1994, Vol. 7, 39-50

An Exploratory Study of the Role and Responsibility of Bachelor Degree Nurses in China

Shen Ning
Peking Union Medical College
Beijing, People's Republic of China

Abstract

This study explored the perceptions of different groups of health professionals regarding the Baccalaureate nurses' roles and responsibilities in the Chinese health care system. A questionnaire was completed by forty-three graduates and thirty-six nurse teachers of Baccalaureate nursing programmes across the nation. Forty-seven staff nurses and thirty-eight physicians, who had been selected randomly from five hospitals in the Beijing area, were also included in this study.

The result showed that Bachelor degree (BSN) nurses were expected to play multiple roles: researcher in nursing, clinical care-giver, nurse manager, educator/instructor, and community health care provider.

While the respondents showed a high degree of agreement for the BSN nurses as researchers, clinical care givers, managers, educators/instructors, there was a significant difference of opinion regarding the community health care function.

Introduction

Formal modern nurse education in China started in 1888. In 1921, a unique Baccalaureate programme in nursing was established at the Peking Union Medical College (PUMC) to prepare nurse teachers and administrators. Since the foundation of the new China the government faced severe shortage of health personnel. The decision at that time was to emphasize on quantity. As a result, nurse education was no longer to be at college level, and the Bachelor of Science in Nursing (BSN) programme in PUMC was closed in 1952. From then until the 1980s, all Chinese nurses, including nurse teachers and administrators, were educated in vocational, technical programmes in secondary schools of nursing. The entry level was lowered to junior high school graduates (nine years of general education), who were 15-16 years of age and were given three years of nurse training. At present, there are more than 500 secondary nurse programmes in China. Many are hospital based, and 40,000 students graduate from these schools each year (NNCC, 1989).

After 1980, the opportunities for international exchange increased rapidly, and it was noticed that a great deal of change had occurred in the rest of the world. The medical model had been changed from a biomedical to a biopsychosocial model, the concepts of health and nursing had been given new meaning, and the role of nurses had also been extended.

Requests for reprints should be sent to Shen Ning, Peking Union Medical College, Department of Nursing, 9 Dong Dan Tiao, Beijing 100730, People's Republic of China.

More and more medical and nurse educators called for re-establishment of higher nurse education to meet the increased health care needs, as well as the demands of rapidly developing sciences and technology. From 1983 to 1985, eleven Baccalaureate nursing programmes, attached to medical colleges, were opened. The entry level was set at 12 years of basic education with a pass in the National College Entrance Examination, as required for medical students. Approximately 300 students graduate annually from the five year Bachelor of Science in Nursing (BSN) degree course. At present there are fewer then 1000 BSN holders among the 970,000 nurses in China (Wang Xin Min, 1992; Gong Yu Xiu, 1992).

Due to a gap of more than 30 years in higher nurse education, nurse educators and administrators are unfamiliar with the new programme. What the students should learn and what the new type of nurses can or should do in the health care system has not yet been clarified. Because there are no job descriptions for BSN nurses, many of them carry out the same duties as the secondary college trained nurses. The identification of the components of the roles and responsibilities of the BSN nurses, therefore, became a critical need, not only for the administrators in the health care system, but also for the nurse educators, because the educational objectives and curriculum cannot be developed adequately unless the functions of the graduate are defined. The purpose of this study is to delineate the roles and responsibilities of BSN nurses in the health care system of China, in order to determine the objectives of the BSN degree programme.

Literature Review

The role and function of BSN nurses in other countries. The American Nurses Association (ANA) identifies three general components for all nursing practice: 1) nursing care (e.g. monitoring, observing and assessing patient's condition, direct care); 2) teaching and supervision, and delegation of nursing practice; and 3) execution of medical regimen (ANA, 1984).

Kramer (1981) pointed out that most BSN programmes in the United States prepare their graduates for the function inherent in five specific roles: the care-giver function which is the mainstay of the staff nurse's position both in hospitals and community health agencies; the managerial-leadership function, which is inherent in such roles as team leaders and assistant head nurses in hospitals; the health promotion and supervision function, which predominates in community health nursing, school nursing, and mental health clinics and is needed in the hospital staff nurse position; the teaching or counselling function, which is or should be an integral part of almost every nursing position; the health and illness screening function, which predominates in primary care, but is increasingly accepted in hospital staff positions.

In Thailand BSN nurses are responsible for providing health education and instruction to hospital patients and to families, school children and other community groups; providing direct care; assisting in rehabilitation; and providing preventive care (Deng Man, 1993).

The Master Degree nurses role in other countries. The master degree nurse's responsibility is commonly defined as educator, researcher, consultant, clinical nursing specialist, manager and change agent (Peplau, 1965; Blake, 1977; Clifford, 1981; Tarsitano, 1986).

Literature related to method of study. Clifford (1981) constructed the Clifford Clinical Specialist Function Inventory based on a review of activities, functions, and tasks performed by clinical nurse specialists, a review of job descriptions provided by hospitals and nurse administrators, and a critique of items to be included in the inventory by 25 clinical nurse specialists. The final instrument contained 37 behaviours associated with the clinical specialist role. Each item was categorized into one of four components: clinical practice - 11 items; education - 9 items; administration - 9 items; and research - 8 items. Maija Selby et al. (1990) developed an instrument to identify core components of the curriculum for Master's level community health nurses. The roles included administrator, teacher/educator, direct care-giver, consultant, and researcher. The instrument's content validity was determined by asking a panel of four leaders in community health nursing and education, and the reliability of the tool was measured by a two-week test-retest of 14 community health nurses.

The American Association of Colleges of Nursing (1986) report listed the essential knowledge, practice and values that BSN nurses should possess. In the section of knowledge for care provider the content was organised according to the nursing process, i.e. assess the patient, diagnose the patient from the nursing point of view, make nursing care plan, implement the care plan, and evaluate the quality of care. The knowledge, capability and skills listed in the report could be used as a reference for developing an instrument for the present study.

Other Chinese literature related to this topic could not be found, and a job description for BSN nurses is not available.

Method

Research design

A sample of health professionals, including nurses, physicians, teachers and graduates of BSN programmes, was surveyed by using a questionnaire. The perceptions of these groups regarding the BSN nurses' role and responsibility were compared.

Sample

Five hospitals were randomly selected from the 39 hospitals which are directly under state or local government in the Beijing area.

Ten head or assistant head nurses who are not BSN graduates and ten physicians in internal medicine, surgery, obstetrics and gynaecology, and paediatrics in charge of departments, wards or family care units were randomly selected from each of the five hospitals. Fifty nurses and 50 physicians were selected.

Each director of the eleven BSN programmes was asked to select four nurse professors or associate professors and five BSN graduates. Forty-four nurse teachers and 55 BSN graduates were selected.

Instrument

A questionnaire was developed based on the literature review and interviews with three Chinese nursing experts.

As the BSN programme is the highest level of nurse education in China, the BSN graduates should assume the roles that the Bachelor and Master nurses performed in other countries, in order to meet the health care needs in China. Some responsibilities of Master degree nurses in the United States were, therefore, included in the questionnaire. The instrument differed from the Clifford Inventory in that it focused on responsibilities that Chinese BSN nurses ought to have, rather than the importance of each component of the roles.

The questionnaire contained 39 behaviours associated with the Chinese BSN nurse role. Each behaviour was categorized into one of the five components: clinical care - 11 items; community health care - 7 items; education/instruction - 10 items; administration - 5 items; and nursing research - 6 items. Each item asked whether this task should be a responsibility of BSN nurses.

The content validity of the questionnaire was measured by interviewing the three nursing experts who are accepted as authorities in Chinese nursing. The reliability of the questionnaire was determined through a one week test-retest process with 15 subjects (reliability coefficient r= 0.92).

Of the 194 questionnaires sent, 171 were returned; 164 were acceptable for analysis. The response rates ranged from 76 percent to 94 percent among the various groups.

The views of the four groups of respondents were analysed by clinical care, community health care, education, administration, and research. The endorsements of each group were compared, and the average endorsement of each item was calculated.

Role-components and responsibilities

The endorsement by the four groups regarding the BSN nurse's role in clinical care, community health care, education, administration and research are shown in Table I.

Table I. Endorsement by the four groups regarding the BSN nurses' role

Area	**Rank order**	**Average rate %**	**BSN graduates**		**Staff nurses**		**Physicians**		**Nurse teachers**	
			Rank	**Rate %**	**Rank**	**Rate %**	**Rank**	**Rate %**	**Rank**	**Rate %**
Research	1	96.3	1	98.1	1	95.4	2	92.1	1	100
Patient care	2	93.8	2	96.4	2	89.7	1	92.6	2	97.2
Management	3	91.1	3	95.3	3	88.1	3	87.9	5	93.3
Education	4	88.2	4	90.0	4	86.0	4	83.2	3	94.2
Community health care	5	72.0	5	81.4	5	55.3	5	60.9	4	94.0

The four groups agreed closely on the importance of research for BSN nurses, as well as their function in clinical patient care, management, and education. However, opinion about their role in community health care differed markedly between the four groups ($p<0.01$ by X test).

Research function

Table II shows the endorsement of each group. The nurse teachers showed 100 % agreement in every item related to research, close to the opinions of the group of BSN graduates. The physicians had the lowest agreement rate of the four groups. Only 78% of the physicans agreed that developing a research plan should be BSN nurses' duty. There was a significant difference for this item ($X=18.18$, $P<0.01$).

Table II. Comparison of endorsement of the four groups regarding the reseach role of BSN Nurses (%)

Responsibilities	Average rate % N=164	BSN graduates N=43	Staff nurses N-47	Physi-cians N=38	Nurse teachers N=36
1. Select research problem related to nursing	93.3	100.0	93.6	92.1	100.0
2. Develop research design	93.3**	100.0	93.6	78.9	100.0
3. Conduct research related to nursing	98.2*	100.0	100.0	92.1	100.0
4. Search for & review research findings	99.4	100.0	97.9	100.0	100.0
5. Evaluate research findings in a selected area	92.1	90.7	89.4	89.5	100.0
6. Promote personal & professional growth by life-long learning	98.8	97.7	97.9	100.0	100.0
Average	96.3**	98.1	95.4	92.1	100.0

* $P<0.05$ ** $P<0.01$

Clinical care

Clinical care refers to hospital patients. There were 11 items in this section (Table III). More than 90% of the respondents agreed that the tasks, except items 9 and 11, were the responsibility of BSN nurses. Item 9 had the lowest endorsement. There was a significant difference between the four groups; only 55.2% of the physicians agreed that this was a task for BSN nurses ($X=11.14$, $P<0.05$).

Table III. Endorsement by the four groups regarding BSN nurses' clinical care (%)

	Average rate %	**BSN graduates**	**Staff nurses**	**Physi-cians**	**Nurse teachers**
Responsibilities	**N=164**	**N=43**	**N-47**	**N=38**	**N=36**
1. Identify patient's health problem and needs	98.8	100.0	95.7	100.0	100.0
Assess the risk factors of the patient's environment	90.9	90.7	83.0	92.1	100.0
3. Establish nursing diagnosis	99.4	100.0	97.9	100.0	100.0
4. Design nursing care plan	95.1*	100.0	89.4	92.1	100.0
5. Provide holistic care	95.7	95.3	91.5	97.4	100.0
6. Identify incorrect order, unsafe medical and nursing action and try to stop it	97.0**	100.0	89.4	100.0	100.0
7. Observe, report the reaction of patient to the treatment	98.2	100.0	95.7	97.4	100.0
8. Provide initial action in emergencies	97.6	100.0	96.0	94.7	100.0
9. Identify ethical and legal issues of nursing practice	73.2*	88.4	68.1	55.2	80.6
10. Sum up the experiences and lessons from nursing practice	100.0	100.0	100.0	100.0	100.0
11. Evaluate quality of care	86.0	86.0	90.9	89.5	88.9
Average	93.8**	96.4	89.7	92.6	97.2

* p<0.05 ** p<0.01

Nursing management

Although there was no remarkable difference between the endorsement of the four groups for each of the five items, the average for the whole section showed a significant difference (X=10.93, P<0.05). The distribution of the endorsement for the five items was closer than that in the clinical care section (Table IV).

Education and instruction

Most of the respondents agreed that every item in this section should be the duty of BSN nurses. The nurse teachers were more likely than the other three groups to indicate that BSN nurses should be educators. The physicians showed the lowest agreement. In particular, only 55.3% agreed that BSN nurses should assess the patient's health education needs and learning ability.

Table IV. Endorsement of the four groups regarding BSN nurses' management (%)

Responsibilities	Average rate % N=164	BSN graduates N=43	Staff nurses N-47	Physicians N=38	Nurse teachers N=36
1. Assist in nursing round	98.6	100.0	100.0	94.8	100.0
2. Assist in establishing criteria for assessment of staff	87.8	93.0	83.0	92.1	83.3
3. Identify problem of nursing management in a unit	88.4	95.3	85.1	84.2	88.9
4. Participate in ward and hospital management	90.9	90.7	89.4	84.2	100.0
5. Act as the communicator in the health team	89.6	97.7	83.0	84.2	94.4
Average	91.1*	95.3	88.1	87.9	93.3

* $p<0.05$

Community health care

Community health care was defined as caring for people in any place outside hospitals, including people with chronic illness and those in good health.

Community health care had the lowest endorsement in the five sections. Although more than 60 percent of the respondents agreed that all the items in this section should be the responsibility of BSN nurses, there were remarkable differences between the groups and between items. The teachers had the highest level of agreement for the whole section. One hundred percent of the teachers agreed that BSN nurses should participate in community health care, but less than half of the staff nurses and physicians shared this view (X=47.04, P<0,01). For providing care outside of the hospital only 44.7 percent of the staff nurses agreed, compared with 100 percent of the teachers (Table VI).

Table V. Endorsement by the four groups regarding education by BSN nurses (%)

Responsibilities	Average rate % N=164	BSN graduates N=43	Staff nurses N-47	Physicians N=38	Nurse teachers N=36
1. Assess patient and family health education needs	77.4**	88.4	70.2	55.3	97.2
2. Develop teach plan for patient and family	81.1	93.0	76.6	71.1	83.3
3. Explain procedure of treatment and medication to the patient	94.5	93.0	91.5	94.8	100.0
4. Supervise persons to maintain optimal health	96.3	100.0	93.6	92.1	100.0
5. provide health education guidance and counselling	91.5*	93.0	91.5	81.6	100.0
6. Develop teaching plan for student nurses	87.2	83.7	87.3	86.9	91.7
7. Develop teaching plan for secondary nurse in-service training	86.6	74.4	91.5	89.5	91.7
8. Provide teaching for students and nurses	92.5	93.0	89.4	92.1	94.4
9. Measure learning outcomes of patient, students and nurses	78.0	86.0	72.4	71.1	83.3
10. Act as role model for student nurses	97.0	95.3	95.7	97.4	100.0
Average	88.2**	90.0	86.0	83.2	94.2

* $p<0.05$ ** $p<0.01$

Discussion

This study explored the perception of different groups of health professionals regarding role and responsibilities of BSN nurses. In the Chinese health care system. The results showed that the BSN nurses were expected to act as nursing researchers, clinical care-givers, nurse educators and health instructors, nursing managers, and community health care providers. The endorsement for each item was higher than 70% except for three items in the community health care section. Overall, there was considerable agreement among BSN graduates, staff nurses, physicians and nurse educators.

The nursing research function was highly valued by the respondents, though interpretation of the literature was felt to be appropriate for nurses with a Master degree rather than for BSN nurses.

Table VI. Endorsement by the four groups regarding BSN nurses in community health care (%)

Responsibilities	Average rate % N=164	BSN graduates N=43	Staff nurses N-47	Physi-cians N=38	Nurse teachers N=36
1. Participate in community health care	59.8**	70.6	31.9	42.1	100.0
2. Identify the priority health problem for a selected community	67.7**	81.4	84.9	55.3	88.9
3. Develop a health care plan for a community	67.7**	83.7	46.8	52.6	91.7
4. Provide care for chronic and aged patients, and maternal child care	70.7**	86.0	44.7	57.8	100.0
5. Participate in preventing controlling and screening epidemic diseases	74.4	74.0	66.0	71.1	88.9
6. Promote health and prevent diseases through health education	90.0	95.3	87.3	81.6	100.0
Average	72.0**	81.4	55.3	60.9	94.0

* $p<0.05$ ** $p<0.01$

As secondary college trained nurses are not able to undertake scientific research. This has hindered the transition of nursing from a technical level into a profession and thus influenced the quality of health care. The Baccalaureate programme is at present the highest level of nurse education in China and the Master degree of nurse education will not be available in the foreseeable future. The graduates of the BSN programmes were, therefore, expected to accept the responsibility of research in nursing. The results of the study reflect this expectation and that the BSN programmes should focus on research competence in the curriculum for BSN students.

Care for the sick remains a basic responsibility for BSN nurses, as endorsed by all five groups. The majority of respondents indicated that BSN nurses should function beyond providing physical care, making beds, and obeying orders. They should provide care in a holistic manner within the nursing process, so that problem-solving and decision-making need to be developed. It was noted that identifying ethical and legal issues in nursing practice is an essential requirement for BSN nurses in other countries (AACN, 1986; Deng Man, 1993). However, in the present study agreement on this was the lowest in this section, particularly-by the physicians. It seems that, for many years, schools of nursing have attempted to teach occupational morality instead of educating in ethics and law. Although, the morality of being a nurse is practised by many nurses in their daily work, it has not been stressed at a theoretical level. Students have only been taught to do but not to think why they should or should not. For these reasons, the respondents, particulary the staff nurses, did not fully recognise the importance of this concern. This situation is being improved; many schools of nursing, especially the BSN programmes have created courses in ethics and law in relation to nursing practice. The teachers and BSN graduates endorsed this item. However, more attention will need to be paid to this issue by nurse educators and administrators.

Most of the respondents agreed that BSN nurses should also be managers. At present the quality of nurse management in China is low, according to the report of the Ministry of Public Health (1990). There are more than 10,000 head nurses and nurse managers among the 975,000 nurses. However, there is a critical shortage of high quality personnel (Gong Yu Xiu, 1992). Most of the nurse management personnel were graduates from secondary nursing schools, and their curricula did not provide any knowledge or skills relating to management. The BSN programmes are therefore, expected to provide well-educated nurse administrators. The results of the study indicate that the BSN nurses' ability of administration, including the principles and skills of scientific management and leadership should be offered by the curriculum.

Education and instruction by BSN nurses was agreed as another important function. Besides teaching patients the BSN nurses were expected to act as teachers of nurses, and to prepare teachers for nurse education, particularly for secondary nursing schools. According to the statistical data provided by the National Nursing Center of China in 1989, more than 98% of the nurse teachers in the secondary nursing schools have graduated from the same level of education (NNCC, 1989). In order to improve this situation, the Ministry of Public Health decided that by 1995 90% of the BSN programme faculty members should possess a Bachelor Degree of Nursing, and by the year 2000 one half of secondary nurse teachers should be graduates of the BSN programmes (MOPH, 1990). The curriculum of these programmes should provide the knowledge and practice of academic teaching, as well as that for nursing speciality training.

An interesting finding of the study was the perceptions of the respondents regarding the BSN nurses' responsibility in community health care. Although, most nurse teachers and BSN graduates valued this role the staff nurses and physicians showed a low level of agreement. Yet the literature review showed that providing care for both the ill and the healthy has become the duty of professional nurses.

The extention of the nurse's role from hospitals to communities was the result of one of the effects of the contemporary biopsychosocial model. However, the results of this study were different. They reflected that the transition of new concept of nursing has not yet been completed in China. In this study the nurse teachers and BSN graduates accepted this new concept more readily than the staff nurses and physicians.

That staff nurses' perception of nursing functions has retained the nurses' traditional role is due to their educational background and working condition. All the staff nurses in this study were graduates from secondary nursing schools and they have seldom had opportunities for continuing education. They have been providing care for hospital patients since they joined the health care system, and they have had little chance to experience patients and healthy people in community settings.

Although the number of nurses has increased more than thirty fold over the past 40 years, there is still a serious shortage of nurses in China. The statistics for 1990 of the ratio of nurses to hospital beds was 1:0.33, the ratio of physicians to nurses was 1:0.75 (Gong Yu Xiu, 1992). For this reason the majority of nurses are assigned to work within hospitals. Fewer than 300 BSN nurses graduate from the eleven BSN programmes annually, this small number cannot fulfil the demands of community health care. Yet of the 1.3 billion population in China, more than 80 percent live in rural areas, where primary health care is provided primarily by the village doctor. There were 776,895 village doctors, 651 assistant doctors and 470,982 midwives in 1990 (Xu Wenbo, 1991). These circumstances have strongly influenced the perception of the BSN nurses' role. However, how care for the people in urban areas is to be provided, and what the BSN nurses can do to meet the needs of the chronically ill, the aged, and others should be discussed further.

Conclusions

The BSN nurses' roles and responsibilities were identified through this exploratory study. Most of the respondents agreed that the tasks listed in the questionnaire were appropriate functions for BSN nurses. While BSN nurses were expected to play the role of researcher, clinical care-giver, nursing manager, educator and instructor, the respondents expressed different opinions on the role as community health care provider.

As this was a small scale study, further studies are required:

1. Larger samples of health professionals to comment on the specific issues relating to the roles of BSN nurses.
2. Identification of the priorities and importance of BSN nurses' responsibilities, in order to assist in modification of curricula and the delivery of present courses.
3. Design of innovative curricula with appropriate approaches to teaching, to prepare BSN students to be able to function in multiple roles after graduation.

References

American Nurses Association. *Issues in professional nursing practice: Legal authority for practice.* Kansas City, MO: ANA 1884-1985.

American Association of College of Nursing (1986). *Essentials of college and universities education for professional nursing: Final report.* pp. 11-12. Washington, DC: AACN.

Blake, P. (1977). The clinical nurses specialist: A nurse consultant. *Journal of Nursing Administration, 7 (10),* 33-36.

Clifford, R.H. (1981). *Perception of employees and educators towards the importance of function of clinical nurse specialist. A summary of findings.* Kansas City: College of Health Sciences.

Deng Man (1993). Brief introduction of nursing in Thailand. *Chinese Journal of Nursing, 28 (8)*, 504.

Gong Yu Xiu (1992). Improving the quality of nursing and developing nursing profession in China. *Chinese Journal of Nursing, 27 (2)*, 52 - 53.

Kramer, M. (1981). Philosophical foundation of baccalaureate nursing education. *Nursing Outlook, April*, 224-228.

Ministry of Public Health of China (1990). *The opinion regarding assigning and utilising the BSN nurses appropriately.* Beijing: People's Republic of China: MOPH.

National Nursing Center of China (1989). *Survey of nursing in China.* Beijing: People's Republic of China: MOPH.

Peplau, H. (1965). Specialisation in professional nursing. *Nursing Science, 3*, 268.

Selby, M.L., Repotella-Muller, R., Quade, D., et al. (1990). Core curriculum for master-level community health nursing education in service and education. *Public Health Nursing, 7 (3)*, 150-160.

Tarsitano, B.J., Brophy, E.B., & Suyder, D.J. (1986). A demystification of clinical nursing specialists role: Perceptions of clinical nurse specialists and nurse administrators. *Journal of Nursing Education, 25 (1)*, 13-19.

Wang Xin Min (1992). *Comparison and analysis of the curriculum of baccalaureate nursing education in China.* In the report of seminar of Chinese and Canadan Higher Nursing Education. Tianjin, People's Republic of China: Chinese Nursing Association.

Xu Wenbo (1991). *The strategy of medical education for the 21 century.* In the report of seminar on national medical education. Beijing, People's Republic of China: Chinese Medical Association Press.

Annals of Community-Oriented Education
1994, Vol. 7, 51-57

The Work of a Dean of Medicine

J.S.G. Biggs[1]
University of Cambridge
Cambridge, United Kingdom

Abstract

The dean, as head of the medical school has responsibilities for the students, the school and the community. The dean will support the students and raise the standards of their education in keeping with the demands that will be made upon them. The dean has a role in the maintenance of the fabric of the school, and in ensuring its place within the community and the medical profession. The dean will need to build educational links with allied health professions. The dean's work is demanding but, in the end, rewarding.

Introduction

The word "dean" comes from the Latin "decanum" meaning one set over ten. The term was used in Oxford and Cambridge by the 16th Century for one who supervised juniors. It has come into wider use in universities and has a special place in medical schools, referring to leadership of a school and responsibility for its affairs. The importance of leadership has grown as medical education has come under increasing scrutiny. Community expectations of medicine and demands upon doctors have grown with new methods of treatment and changing social problems. The challenge to every medical school and every dean is seen in recommendations on medical education by the General Medical Council (General Medical Council, 1993) in the UK in 1993 which call on medical schools "to educate doctors capable of adaptation to change, with minds that can encompass new ideas and developments and with attitudes to learning that inspire the continuation of the educational process throughout professional life".

The principal work of a dean of medicine is leading a school to the achievement of similar objectives. The dean will focus attention on the students, the educational programmes and the fabric of the school, and also on the place of the school in the community and the medical and allied-health professions; understanding and support from these groups is essential for the short and long term success of the school. These areas will be considered in turn, but first, some aspects of the deanship need to be touched upon.

---

[1] Formerly Dean of Medicine, University of Queensland, Australia

Requests for reprints should be sent to J.S.G. Biggs, Postgraduate Dean, The Clinical School, Addenbrook's Hospital, Cambridge CB2 25P, United Kingdom

The Deanship

The dean should probably be a medical graduate. Some schools insist upon it, and, in any case, there is advantage in the dean knowing the pressures and pitfalls of a medical training and career. The support of the profession will come more easily to one of its own.

The mandate of a dean of medicine varies widely, from responsibility for the full function and fabric of the school at one end of the scale, to oversight of class and examination matters and student welfare at the other. For many deans the tasks lie somewhere in between, but the influence and status of the deanship will be determined by the commitment and drive of the individual.

A new dean's ability to have a major impact on the school will be affected by the method of appointment. The challenge to a dean will be daunting when the appointment is by rotation of departmental heads for terms of two or three years. Advertisement of the post, with clear directions to a committee and to potential applicants of what the school offers and what it expects, is much to be preferred. The details should include whether the post is to be full or part-time, and also the balance of deanly activities and those in clinical work or research. Opinions differ on these matters, and the correct answer will depend upon the size of the school, the number and capacity of associate deans and staff, and the tasks to be accomplished. The successful school may consider its needs will be met by a part-time appointment. The school that wishes to raise its educational aims and its impact on the community will prefer a dean whose main, even only, task is the strengthening of the school's programmes and work. At a time when change lies waiting to overtake any complacent institution, the balance should be towards a full-time dean.

The dean's work will be most effective, if the office is close to the students and their learning activities. The ideal situation is for the medical school and the dean to be placed in the principal teaching hospital with basic medical science departments in the same complex and a general or family practice nearby. The students then have contact with clinical care from the beginning, contact with other health care professions, and easy access to aspects of community care. The dean can readily mix with students at all levels of training and can have an impact on the medical clinical staff, as well as on multiprofessional health care education.

The Dean's Focus on the Students

The dean of medicine will be involved in selection of new students and in care of them. It will sometimes be necessary to protect them. Each of these aspects will be addressed.

Selection of students. Selection has given rise to many studies, especially in the years since medicine has appeared to offer greater promise than other walks of life. The dean of medicine will seek to have the best students selected and the dilemma is in the choice of parameters that constitute "best".

The best may be those who will cope best by academic measures; the best will certainly be those likely to succeed in completing the course. How to select those who will make the best doctors in the longer term remains an enigma. Studies in Queensland, Australia showed that high school academic scores were the only selection measure significantly related to performance in the medical course and completion of the course (Biggs, 1987). Another Queensland study showed that poor performance in the first year of the course and withdrawal from medicine were related to lower socioeconomic background and family problems (Biggs et al, 1991). A further study showed the influence of mature age entry on career choice and job satisfaction (Harth et al, 1990). The evidence needs to be gathered to enable a dean to plan the admissions policy.

The question implied in the GMC recommendation quoted above is that other qualities than academic brilliance are important — adaptability to change, a readiness to accept new ideas and an acceptance of life-long learning. With the same end in mind, schools like that in Newcastle, Australia, have used psychometric tests and structured interviews to identify *"a spectrum of personal qualities that are considered desirable in an intending medical practitioner"* (Neame at al, 1992).

The dean's role in the selection of students is to ensure a policy that is clearly defined and understood by all involved in the process, including would-be students and the community.

Care of the students. The dean's care of the students begins before they enter the school and may continue after they leave. It starts in contact with high-school students who are still deciding whether to apply for medicine. The dean will arrange meetings with schools and offer objective advice about the attractions and discouragements of a medical career. Questions will be answered about specific matters. The dean will reassure students with deafness, or colour blindness, or a physical disability that the school will accept them if they meet educational standards. Minorities will be assured that their aspirations are respected and that places will be available. In Queensland, just before the course started each year, the dean met parents, telling them of the school and the medical profession, and the educational and social challenges lying ahead, thus engaging their support for their offsprings and the school.

On opening day, the dean will meet all the students, to describe the school's programme, the standards and the rules. During the course the percipient dean will have an open door for students. It has been said that a dean may see only the bad and the bold, but a wise dean will invite those who are doing well in the course, in addition to those performing poorly, to talk about their work. Experience shows that where entry requirements are rigorous, the student who is falling behind is physically or mentally unwell, is taking drugs, is in severe financial or personal trouble, or has lost the desire to pursue a medical career. The dean has a responsibility to enquire gently and sensitively and to offer help whatever the cause of the trouble.

At the end of the medical course the dean will be lavish in his praise of the graduates and will keep an eye on the careers of those who stay within sight, and on occasion, those who write from the other side of the world. There are many examples of medical societies that have been encouraged or even established by deans in order to maintain contact and keep the support of students long after their graduation.

Protection of the students. There are occasions in most medical schools when the students will need protection from their seniors — when assessments have been mishandled, or courses have been badly delivered, or not delivered at all, or when students consider they have been abused, harrassed or unjustly treated. Sheehan et al (1990) reported abuse and harrassment of various kinds of most medical students in their study. A dean, having carefully analysed the situation, may need to be firm and forthright with staff or students or both. On occasions the matter may need to be taken beyond the medical school.

Education Programmes of the School

The dean's role in the educational programme and progress of the school is an especially challenging one. Medical education has gone through many phases in the last 40 years, with different emphases in different countries. In the 1940s and '50s there was a drive for student learning in a community setting; the 1960s saw a wave of "systems-based" medical schools; the 1970s contained much about "problem-based" learning; and a flavour of the 1980s was "computer-assisted learning". Other threads are woven into this rich cloth, threads like small-group learning, student-based learning, new forms of assessment, an emphasis upon community care, multiprofessional learning, and the availability of optional courses. The dean will establish many studies of new proposals or methods, based on experience or the advice of individuals or committees in the school. Some proposals will come to fruition. The sole object of these studies must be the raising of the educational standards of the school. The dean's work includes evaluation of current programmes and raising the status of teaching, and each will be considered.

Evaluation of current programmes. Evaluation of existing programmes gives an essential basis for consideration of change. A practice adopted in Queensland was to survey one or two of the six years of the medical course each year, employing a university education unit to prepare and analyse a questionnaire for students and staff. For the final year of the course, recent graduates were also asked about its strengths and weaknesses. In another medical school, students assess each lecture and teaching unit on a five-point scale and the accumulated replies are fed back to the teachers. Successive low scores result in a change of teachers.

Raising the status of teaching. The policy of universities giving priority in promotion to research and development rather than teaching has been increasingly questioned (Abrahamson, 1991; Menken, 1992). A task of the dean of medicine is to restore the balance by raising the status of teaching. One approach to the task is provision of an educational research and development resource in the dean's office, and this is under way in almost every medical school in the UK (Biggs et al, 1994). The work of this office may include emphasis upon the quality of teaching through regular assessments, and planned development of clinical teachers' skills. The evidence of success of one such programme was the enthusiasm of the teachers who took part (Biggs and Price, 1992; Price and Mitchell, 1993).

In many medical schools, the major burden of clinical teaching is carried by consultants or senior clinicians attached to hospitals, but there has often been little acknowledgement or recognition of their role. The dean who values these teachers will look for ways to encourage them. Methods deemed successful include publication of names and appointments in medical school year books, and awards for excellence in teaching, based on student and peer recommendations. A more demanding but more valuable process is persuasion of the university to grant clinical academic titles to committed clinical teachers, identifying clinical mastery in the same terms as research excellence (Biggs and Price, 1992).

The Fabric of the School

The dean has a role in the maintenance of the fabric of the school. It is a vital activity, for every building and classroom and every piece of furniture begins to wear on the day it is made, and the dean needs to keep an eye on maintenance programmes and, where necessary, suggest, cajole or argue to bring attention to the need for new stairs or new chairs or repainting. Equally important is the dean's task in noting the use of space and facilities and being alert to changing needs that come with changing educational methods. Available facilities must be appraised whenever a new class or course is proposed, and, on occasion, the dean will need to find funds to build anew or to modify existing fabric. There was a senior librarian who measured the demands on his resources that came with every new programme; he required identification of new library funds before supporting a new initiative, and the dean's policy, on a wider front, must be the same.

A bold dean, assessing future developments, will plan for new space and renewal of old, even before new programmes arise. To do this in hard times, the dean must build a network of contacts within the university, with the government health department, and with potential outside donors, including international agencies. The dean must have an eye constantly open for sources of funds; the successful dean of medicine will be the leader in competitions for funds and will often find them before others start looking.

The Place of the School in the Community

Almost every community believes in its medical school as the source of the doctors upon whom its members depend in times of trouble. However, many communities have become more knowledgeable about medicine and more demanding of the medical profession. The medical school is similarly susceptible to comment and criticism. The work of the dean in this area is to make the community aware of the high standards of its medical school and thus to give confidence in its graduates and, by association, the medical profession. The dean will invite the public to visit the school on open days. The dean will have a direct line to journalists and will acquaint them of new initiatives such as innovative educational methods, special programmes for minorities or disadvantaged students, and successes of students and the school in national programmes. As part of this process of communication by the school to the community, the dean will address every medical class at least once a year, describing new proposals or policies, or, on occasion, admonishing the class. Every student has friends outside medicine, and many have parents or other family members who are medical and who have their own networks. Where the dean needs to direct a forceful message to a community a potent beginning is by suggestion or, better still, by persuasion of the medical class.

The influence of the dean in the school and the community. This paper has touched upon the needs of students, the school and the community, but an area in which the dean can influence all is in promotion of medical and social standards. The dean might join in screening programmes for heart disease or cancer, or in immunisation programmes for small children. The dean should lead the school to a non-smoking policy and status. If excessive use of alcohol is a community problem, the dean should be ready to promote care and moderation. Where there are recent immigrant or disadvantaged minorities, the community will take note of medical school actions to admit and assist students from these groups.

The Dean, the Medical Profession and Health Care Professions

The medical profession has a vested interest in the medical school as its ranks are replenished from there. In some countries, many students come from medical families (Huckle and McGuffin, 1991). The profession provides most of the medical teachers, and the academic staff are mostly members of the profession. The dean has a task to work with the profession and the local medical association, since each can gain from the other. The progressive medical association will invite the dean to join its council. The wise dean will accept, and ask the president to join the medical school board.

There are pressures in many countries for health care professions to work more closely together. Doctors and members of allied professions work in teams in hospitals and in general or family practices, and closer ties in education programmes will develop. The work of a dean includes planning with allied professions for joint lectures and course modules, core programmes for medicine and dentistry have been proposed in some universities. Joint study for nursing and medical students in the care of the aged is an example of opportunities in the clinical field. There must be many more.

Conclusion

Few deans will achieve all this. The more actively the dean strives to work for the students, the school and the community and professions, the more visits, the more committees, the more evaluations will be needed. The task may become so burdensome that a dean may wish to withdraw. For many, however, the gain from even part achievement of the goals will bring great satisfaction. The thanks of students who have succeeded against all odds are rewards that are better than gold.

Acknowledgements

The assistance of all who worked with the author while he was dean of medicine in the University of Queensland, Australia, 1983-91, is gratefully acknowledged.

References

Abrahamson, S. (1991). The dominance of research in staffing of medical schools: Time for a change? *Lancet, 337,* 1586-1588.

Biggs, J. S. G. (1987). *Student characteristics on entry to medicine & overall course performance.* In: Mohd Roslani Abdul Majid (Ed.) Proceedings of the International Conference on Medical Education. Kota Bharu, Malaysia, 12-17 July 1986. School of Medical Sciences, Universiti Sains Malaysia, Pulau Pinang: 136-143.

Biggs, J. S. G., Najman, J. M., Schultz E. B., & Williams, G. (1991). Parental problems influencing the academic achievement of medical students: A prospective study. *Medical Education, 25,* 374-382.

Biggs, J. S. G., & Price, D. A. (1992). Sustaining and rewarding clinical teaching. *Medical Education, 26,* 264-268.

Biggs, J. S. G., Agger, S. K., Dent, T. H. S., Allery, L. A., & Coles, C. (1994). Training for medical teachers: A U.K. survey, 1993. *Medical Education (in press).*

General Medical Council (1993). *Tomorrow's doctors.* Recommendations on undergraduate medical education. London, United Kingdom: General Medical Council.

Harth, S. C., Biggs, J. S. G., & Thong, Y. H. (1990). Sociodemographic characteristics, career choice and job satisfaction of mature-age entrants to medical school: A controlled study. *Medical Education, 24,* 488-498.

Huckle, P., & McGuffin, P. (1991). Familial factors in going to medical school. *Medical Education, 25,* 13-15.

Menken, M. (1992). Humanitas in medical education. *Medical Education, 26,* 429-432.

Neame, R. L. B., Powis, D. A., & Bristow, T. (1992). Should medical students be selected only from recent school-leavers who have studied science? *Medical Education, 26,* 433-440.

Price, D. A., & Mitchell, C. A. (1993). A model for clinical teaching and learning. *Medical Education, 27,* 62-68.

Sheehan, K. H., Sheehan, D. V., White, K., Leibowitz, A., & Baldwin, D. C. (1990). A pilot study of medical student "abuse". *Journal of the American Medical Association, 263,* 533-537.

Annals of Community-Oriented Education
1994, Vol. 7, 59-62

Academic Counselling: Status and Perceptions of Staff and Students in a Traditional Medical School

T. Singh, M.V. Natu, A. Zachariah and P. Zachariah
Christian Medical College
Ludhiana, India

Abstract

A questionnaire was administered to 33 teachers and 100 medical students to establish the present status of academic counselling. Teachers' self-appraisal of counselling abilities and students' perceptions of teachers' counselling activities were both unsatisfactory. It is suggested that due importance should be given to develop counselling ability of medical teachers. Various steps taken for this purpose are outlined.

Introduction

In addition to teaching, academic counselling (AC) is an important responsibility of the teacher (Lewis, 1984). With the current emphasis on student-centred learning, AC assumes even greater importance. The basic purpose of AC is to make the learner self-directed, self-sufficient and a self-dependent person in matters relating to his studies. Without adequate counselling support, any system of learning is likely to fall short of its intended objectives.

AC can be either directive or non-directive (Rao, 1992). As learners in higher education are mostly mature individuals, non-directive counselling is generally preferred, so that learners choose the course of action best suited to them. AC can be considered as consisting of three important activities, information (providing correct and factual information), counselling (finding out the needs and aspirations of individual students) and advice (offering possible alternatives, leaving the responsibility of choosing the best one to the student). Such non-directive counselling is increasingly used in India by student-centred learning institutions (Indira Gandhi National Open University, 1988) for non-medical studies and is referred to as the I-A-C spectrum.

Medical teachers in India have not received any formal training in teaching and are, therefore, not familiar with the requirements of AC. It can be assumed that their perceptions as to what is meant by AC will not be uniform. As the Department of Pharmacology had adopted small group learning by objectives (Natu et al., 1991), it was decided to provide counselling guidance, so that this aspect of teaching would not remain neglected.

Requests for reprints should be sent to M.V. Natu, Christian Medical College, Department of Pharmacology, Ludhiana (Punjab) - 141008, India.

The first step was to establish the existing level of AC on which further interventions could be built. The present communication describes the status of AC as perceived by both teachers and students at the Christian Medical College, Ludhiana, India.

Material and Methods

A questionnaire was prepared on the basis of published attributes of AC (Katz, 1985). Five important dimensions were selected, each from the points of view of teachers and students respectively (Table I). The purpose of this enquiry was explained to the staff and students at separate informal meetings convened by the Principal. A free response was requested, and anonimity was assured. The questionnaire was administered to all the teaching staff of the pre- and para-clinical departments (N=33) and the entire cohort of medical students (100) who had completed their studies in these subjects. The respondents were requested to use a 5 point scale "Always", "Usually", "Cannot say", "Sometimes", and "Never". A differential scaling technique was adopted (Best and Kahn, 1992) to grade the responses. The values for two indices were calculated on the basis of scores thus obtained. These indices were modified from an earlier student acceptability index (Jain et al., 1990) and served to scale down the scores to a maximum score of 1. The indices were intended to serve as a baseline for subsequent comparisons.

The counselling self-appraisal index (CSI) was calculated from the scores assigned by the individual teacher, by using the formula:

$$\text{CSI} = \frac{\text{Algebraic sum of weighting}}{25}$$

The counselling ability index (CAI) was calculated for individual teachers by using pooled responses of all students, by using the formula:

$$\text{CAI} = \frac{\text{Algebraic sum of weighting}}{\text{no. of respondents} \times 25}$$

Correlation between the two sets of scores was calculated using the Pearson-product-moment co-efficient of correlation (Best and Kahn, 1992).

A list containing names of the teachers and their codes was held by a senior teacher who was not part of the enquiry. Each teacher could compare only his/her own scores as given by the students with the mean scores for the departments.

Results

The range and mean of both indices are shown in Table II. The identity of the respective departments has been obscured.

Table I. Statements used for the evaluation

A) Teachers

Do you:

- tell students what they are expected to achieve;
- discuss learning activities with students;
- talk informally and ask them what they have learned;
- notice students who seem to have learning difficulties;
- show students that you are interested in solving their problems?

B) Students

The teacher:

- is sensitive to students' feelings;
- is ready to help wherever possible;
- limits contacts to class room only;
- is biased;
- humiliates students who disagree.

Table II. Mean values and range of two indices (N=33)

Department	N	CSI*	CAI*	Correlation between two scores***
A	6	0.34 (0.21-0.61)	0.19 (0.11-0.31)	0.12
B	6	0.29 (0.23-0.56)	0.12 (0.09-0.43)	0.17
C	6	0.33 (0.29-0.64)	0.13 (0.12-0.37)	0.11
D	6	0.39 (0.28-0.76)	0.22 (0.21-0.79)	0.15
E	6	0.21 (0.19-0.53)	0.18 (0.17-0.13)	0.13
F	3	0.24 (0.22-0.56)	0.11 (0.09-0.42)	0.11

* Counselling self appraisal index
** Counselling ability index
*** None of the correlations is statistically significant ($P<0.05$)

Discussion

Academic counselling can be compared to the illumination provided by a street lamp on a dark road. It assumes special importance in student-centred learning, where a tutor has to function more as a facilitator than as a teacher.

It should be a matter of concern that counselling has been delegated to a back seat in most professional institutions. Our own results bear testimony to this fact. It can be seen that most teachers do not consider themselves good at counselling. Interestingly, there is no statistically significant correlation between the teachers' self-perception and the students' assessment.

There is no ambiguity about the fact that the counselling abilities of teachers need to be strengthened, if we are to improve the standards of medical education.

Sessions have been organised by two of the authors, M.V. Natu and T. Singh to familiarise the medical teachers with the basics of counselling. Emphasis has been laid on the qualities of a counsellor and on structuring a counselling interview within the framework of the I-A-C spectrum. Simulated demonstrations have also been held to facilitate understanding. The intention is to give both staff and students a clear picture of what is involved in AC. Thus, teachers should know what students can expect from them, and the students should be able to identify situations when they can look to teachers for academic counselling.

The next important requirement for the success of counselling is the study of student characteristics, e.g. who does and who does not seek counselling, and the relationship of age, sex and intelligence with seeking counselling. A project has been initiated in the Department of Pharmacology and the results will be reported in due course.

References

Best, J.W., & Kahn, J.V. (1992). *Research in education.* New Delhi, India: Prentice Hall of India.

Indira Gandhi National Open University (1988). *Handbook on counselling.* New Delhi, India: Indira Gandhi National Open Universty.

Jain, P.K., Mutalik P.G., Chhina, G.S., & Thomas S. (1990). *Student evaluation.* Proceedings of workshop on student evaluation. New Delhi, India.

Katz, F.M. (1985). *Evaluating educational programmes for health personnel.* Offset Publication No. 49. Geneva, Switzerland: World Health Organization.

Lewis, R. (1984). *How to tutor and support Learners.* London, United Kingdom: Council for Educational Technology.

Natu, M.V., Singh, T., Singh, D., & Zachariah, A. (1991). Evaluation of small group learning by objectives in the teaching of pharmacology. *Indian Journal of Medical Education. 30,* 27-31.

Rao, S.N. (1992). Counselling and guidance (2nd edition). New Delhi, India: Tata McGraw Hill.

Annals of Community-Oriented Education
1994, Vol. 7, 63-71

A "Student-Centred" Educational Programme - Theoretical Considerations

J. E. Des Marchais and R. Hivon
University of Sherbrooke
Sherbrooke, Quebec, Canada

Abstract

The theoretical basis and implications for 'student-centred education" are discussed from the literature and from the perceptions of ten Network mentors. Sharing interpretation of basic concepts is congruent with the definition that education is the science component in the art of preparing health professionals to fulfil their role in society effectively. Needs and objectives, instructional method, evaluation, the learner and the teacher, all essential components of any educational programme, are considered, in order to increase the likelihood of sustaining active acquisition of professional expertise by recognising independent learning, giving students major responsibilities in defining their own needs, enhancing learning centred on real problems to be solved, valuing cooperative and group interaction to sustain individual learning, and offering sharing assessment of the process and the outcomes of learning. The authors offer thus a six step hierarchical involvement of a self-learner in educational programmes.

Introduction

Even though the Network has dealt many times in the past with the "community aspects", it was decided to choose "student-centred education" as the theme for the 8th Biennial General Meeting in 1993. It was thought to link the "educational mission" with the Sherbrooke paedagogical reform (Des Marchais, 1991; Des Marchais et al., 1992; Des Marchais, 1993), which is, at the same time, a particular response to the health needs of a community, "la communauté québécoise". The Sherbrooke curriculum reform focused on a student-centred and community-oriented programme. Renewed interest in student-centred education can be considered one of the most interesting developments in the field of health professional education in the past two decades.

This paper considers the theoretical basis and implications for the topic "student-centred education". It would be useful to have a common definition and some agreed criteria.

Method

The sharing of the interpretation of the basic concepts was considered in two ways. First, in reflecting upon experience, one would obviously look at what others have said (Borg and Gall, 1989). However, to focus on the needs of the Network was a priority. Therefore,

---

Requests for reprints should be sent to J.E. Des Marchais, University of Sherbrooke, Faculty of Medicine, Québec, Canada J1H 5N4.

a series of "mentors" were asked for their interpretation of the meaning of "student-centred education" and its criteria. Thus, the present report may be regarded as a synthesis of all these contributions.

In developing a sound educational programme, a student-centred model ought to be defined as an approach to curriculum design in which the needs, intellectual characteristics and interests of the student are taken into account as the fundamental premise for the development of the educational curriculum, its objectives, its instructional methods, and its procedures for assessment. Figure 1 will serve as a framework in explaining a "student-centred curriculum".

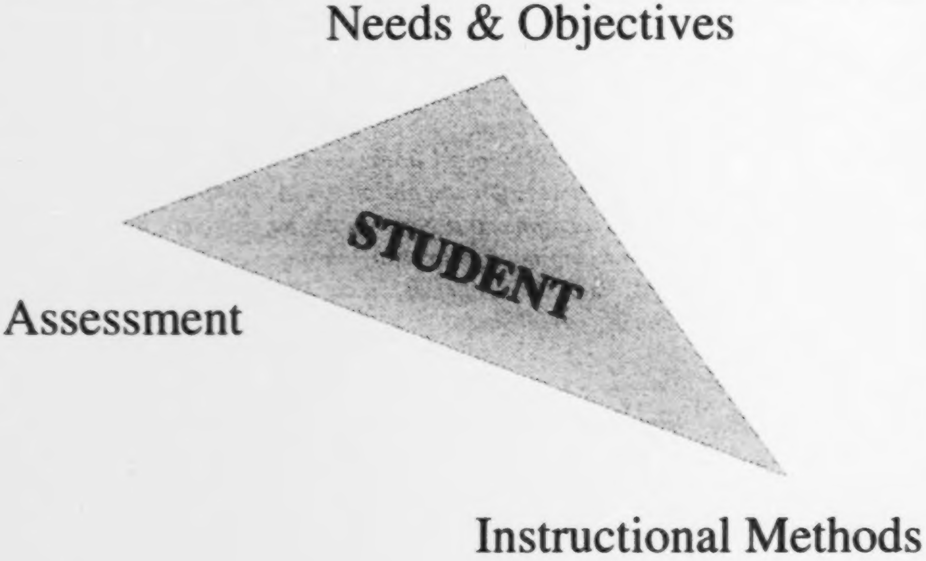


Figure 1. A student-centred curriculum

Definition

In a conventional curriculum, where lectures are the predominant instructional format, a number of professors would still argue strongly that "their" lectures are challenging the students' mind. However, those who have had the superb opportunity to be a problem-based learning tutor would agree that the PBL method is, without doubt, a student-centred instructional format. Many clinicians would also argue that the one-to-one student interaction in clinics is geared to the student's needs of mastering clinical competence. While this is a student-centred instructional format, in most instances, clinicians restrict their input to telling clerks and residents what is the right thing to do; these clinicians cannot resist the demonstration of their own expertise.

What are the definition and criteria which should characterise a "student-centred education"? First, a definition of education from the chairman of the Association of American Medical Colleges in the annual report of November 1992 (Clawson, 1992):

> *"Self-paced, student-directed learning with specific outcomes measurement should be our goal, with the physician becoming the model of the lifetime learner."*

In talking about education, anyone should be able to accept the notion of a global aspect which enables the student to develop personally, academically, and professionally as an individual by acquiring relevant knowledge and skills, especially in the affective domain. Such an educational process enables the student to develop to his/her full potential as a human being contributing within society. Therefore, the notion that education is much more global and comprehensive, than solely a process of learning, needs to be recognised. To educate is to help someone to acquire new behaviours within a society.

The process of education should be purposefully targeted to achieve aims and goals which need to be relevant and explicitly reconfirmed by institutions and teachers, namely in relation with the end-point, a clinical community-oriented competence. A clear educational mandate confirms the value for students of investing energy in the educational programme. In accepting that any education implies global aspects and purposeful activity, we have found no better definition to illustrate that notion than:

> *"Education is the science in the art of preparing health professionals to fulfil their role in society affectively"* (Boelen, 1993).

There is one series of beliefs about teaching and education (Perkins and Salomon, 1989):

- to learn is a process of accumulating information and specific skills;
- the teachers' first responsibility is transferring their own knowledge directly to the student;
- the teachers' first objective is changing students' behaviour;
- the process of teaching and learning is primarily centred on the student-teacher relationship; and
- the skills and abilities are transferable throughout all content.

Other research results have brought new beliefs based on new theories of learning:

- every learning requires that the student actively builds up his/her knowledge (Brooks, 1990);
- previous knowledge strategically impacts on new knowledge (Brandsford and Vye, 1989);
- teachers cannot sustain the learning process on behalf of the student, because learning is an active process (Schlechty, 1990);
- cooperative learning with peers becomes an important source of motivation and

support (Resnick and Klopfer, 1989); and
- the specific learning strategies of any content do have a major impact on student learning (Perkins and Salomon, 1989).

If one accepts these beliefs, what would be the components of any programme centred on students?

Components of a Student-Centred Educational Programme

In any educational programme, the three major components should include identification of needs and objectives, instructional methods, and assessment.

Needs and objectives (What should be learned?)

What does "needs and objectives" mean in a student-centred education model? The Network mentors suggested these characteristics:

- initiative in defining one's own learning needs;
- adaptation to individual differences;
- specification of outcome objectives; and
- emphasis on learning rather than on teaching.

Instructional methods (How should it be learned?)

What should the instructional methods be in a student-centred education model?

The Network mentors suggested several characteristics:

- the instructional methods should have primary concern for the active learner, and there should be provision for student participation in planning the learning experience;
- the student initiates and sustains the action of learning;
- adaptation to differences, provision for individual study paths, provision for self-tailored formats, and capacity for selecting methods; and
- learning should lead to mastery of professional expertise in a cognitive mode where new knowledge builds on prior knowledge thus optimising what the student is learning.

Student-centred learning requires that students accept a large measure of responsibility for their own learning. This notion is more comprehensive than self-directed instruction which might still be planned, designed, and controlled by the teacher and the administrators of the programme.

Assessment (How should it be assessed?)

The third component of any educational programme is assessment and evaluation. In any learning activity, valid and reliable assessment is mandatory. In assessment as in measurement no single process is adequate. The institution needs to establish standards and develop an assessment process that will truly reflect the aims and objectives of the educational programme.

This notion raises another difficulty in defining criteria for student-centred education. Thus, the Network mentors suggested the following characteristics:

- students should share in the evaluation of the process and outcomes of their learning;
- students should also receive adequate personal feedback, in order to modify their learning strategies;
- it is important to have a non-competitive climate where formative self-assessment, assessment by peers and by direct observation is used frequently; and
- assessment should lead to the development of the personal and professional habit of self-direction and to the acquisition of life-long skills.

Learner

The above comments have described the characteristics of programme components as the criteria for student-centred education. However, if the learner is to be at the centre of a process which emphasizes learning rather than teaching, what are the characteristics of the learner in this model? In summarizing the observations made by the Network mentors a hierarchical grid of involvement was developed for the student learners as they become increasingly more responsible for their own learning throughout the various steps of their educational programme (Fig. 2). This grid includes five steps, where each successive step includes the previous ones:

- *Step one*, the student actively participates in the learning activities;
- *Step two*, the student initiates the planning. The selection of learning activities is based on individual needs and learning styles;
- *Step three*, the student adjusts and modifies the activities, including assessment and shapes them to increase the learning in both depth and breadth;
- *Step four*, the best student-centred model would offer the student control of each step and component of the programme; and
- *Step five*, the student would be a totally autonomous learner.

Thus the end-point is self-paced, student-directed learning which should be sustained throughout the physician's lifetime.

The Teacher

In a student-centred education model, the teachers have to adopt a very different role, to motivate, guide and facilitate the students' learning. If it were accepted that the students' full participation in their learning is the central issue, attitudes to teaching must also be transformed.

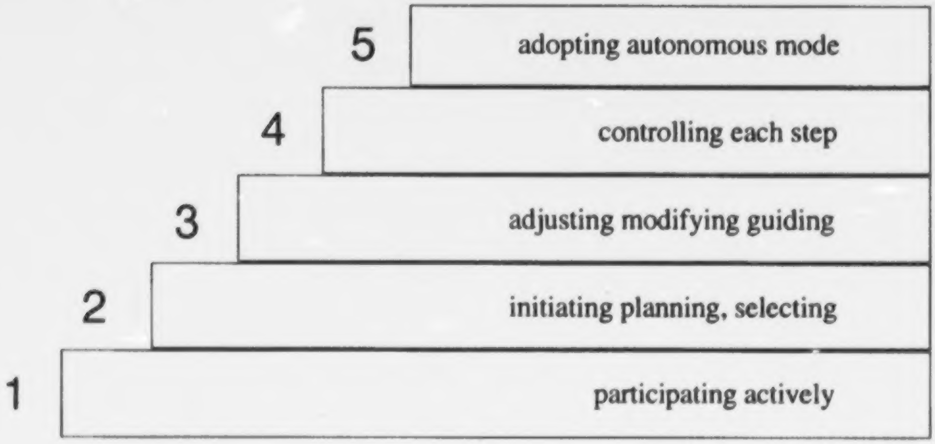


Figure 2. Hierarchical involvement of a self-learner in educational programme steps

A student-centred approach makes special demands on the teacher. Recent research (Schulman, 1987), indicated that the key is in "paedagogical content knowledge", the "blend" of content and paedagogy needed to communicate to students. Such knowledge is grounded in a deep understanding of one's subject matter and what students already know, including any misconceptions.

We are told that Socrates knew the right way to raise questions, in order to enhance a student's learning. He led the student along the path of analysis and problem solving by offering an environment that triggered the student's motivation. We do not know whether he treated the student as a responsible adult who could take charge of his own learning. In any event, he fostered student autonomy by setting an example of professiorial behaviour. Thus, faculty members ought to have a positive attitude towards their specific role of guiding students throughout a student-centred programme. It may not be easy to give up the glamour of traditional teaching for the facilitating role of a problem-based learning tutor.

The major goal of a student-centred education programme is to facilitate relevant learning, both in terms of quality and quantity. In such a programme, the primary responsibility belongs to the students because they are the only ones capable of constructing their own learning. More specifically, the programme:

- offers sustaining action for developing professional expertise;
- recognizes an independent process of learning;
- offers students major responsibility in defining their own needs, in order to specify outcome objectives;
- allows full integration of cognitive, affective and social dimensions;

- enhances learning centred on real and concrete problems;
- values cooperative interaction within a group to sustain individual learning;
- offers shared evaluation of process and outcomes of learning.

These concepts of a student-centred programme are supported by a human and cognitivistic approach to education. It expects students to be responsive and responsible learners, capable of making the right choice, and accountable for what they need to become thoughtful professionals. Students should thus set out to develop, well beyond professional competence, specific capabilities in self-learning, interpersonal communication and observation, so that they will continue to develop in a context of pursuing their own education. These learners will be independent of information processed and analysed by others.

Such a programme is quite demanding, because it requires major change from previous educational models that students will have experienced, and it will expect teachers to act differently. Such a programme would be only feasible, if students were guided and stimulated by faculty members who are committed to the development of their students as future autonomous professionals. Thus, from presenters of information, teachers become helpers and facilitators of the students as self-educators in a real sense. The process of learning is, therefore, as important as the content. Teachers should then be interested in how students learn, how they organise their thinking and how they develop strategies for storing information. Teachers need to develop skills in tolerance, guiding, stimulating, and active understanding.

This view would make the W.H.O. definition of learner-centred education particularly relevant. *"Learner-centred education is an educational strategy which depends on the capabilities and the motivation of the learner. The learner is expected to take responsibility for his own learning. The emphasis is on the active acquisition of information and skills by the learner, depending on the learner's ability to identify personal educational needs, the way and at what pace he learns best, and his ability to evaluate his own learning."* (World Health Organization, 1992).

Conclusion

A student-centred education will face teachers with a series of unresolved questions:

- how should individual needs and interests be dealt with in a small group learning context?
- how should the teacher balance the need for productive feedback with the effect on the students self-esteem?
- how should students' motivation be aimed towards their personal objectives, while, at the same time, a normative content is to be mastered within a given period of time?
- how should an educational system maintain intellectual freedom and flexibility, when all students are to learn with the same set of "problems"?

These dilemmas will persist in these educational programmes, despite the wish to foster a level five self-learner centred programme (a fully autonomous mode). Health professions in general require professional expertise which is normative, socially controlled and well defined. This calls for self-paced steps in constructing their own optimal learning patterns.

In brief, in spite of all these dilemmas, we contend that a student-centred educational programme, even when not fully developed according to the suggested hierarchical model, should lead to greater enhancement of student motivation than programmes centred on textbooks and lectures. This programme demands active involvement of the student in learning activities. At the same time, the small group sessions, so often associated with problem-based learning model, add a climate of collaborative sharing in the acquisition of learning. This is clearly more productive than the competition that is normally associated with a conventional programme.

These observations support an educational system that gives students the central role in their own education. They are, after all, our future colleagues. We, as faculty members, have been entrusted with preparing them for lifelong learning and service to their community. As a faculty, we are personally and professionally committed to prepare the next generation. Should they not be better than us?

Acknowledgements

We would like to thank the following mentors for their contribution: Mohd Roslani Abdul Majid, Kelantan, Malaysia; Georges Bordage, Chicago, Illinois, U.S.A.; Charles E. Engel, London, Great Britain; Varavudh Sumawong, Bangkok, Thailand; Neil Paget, Sydney, Australia; Zohair Nooman, Ismailia, Egypt; David Newble, Adelaide, Australia; Henk Schmidt, Maastricht, The Netherlands; and Bertrand Dumais, Sherbrooke, Canada.

References

Boelen, C. (1993). Medical education reform: The need for global action. *Academic Medicine*, 67, 745-749.

Borg, W.R., & Gall, M.D. (1989). *Educational research: An introduction.* New York, NY: Longman.

Brandsford, J.D., & Vye, N.J. (1989). A perspective on cognitive research and its implication for instruction. In: L. Reswick, & L.E. Klopfer (Eds.). *Toward the thinking curriculum: Current cognitive research.* Alexandria: Association for Supervision and Curricular Development.

Brooks, J.Y. (1990). Teachers and students: Constructivists forging new connections. *Educational Leadership, 47, (5),* 68-71.

Clawson, K. (1992). *The chairman's report.* American Association of Medical Colleges, American Medical Education: Institutions, Programs and Issues.

Des Marchais, J.E. (1991). From traditional to problem-based curriculum: How the switch was made at Sherbrooke, Canada. *The Lancet, 338,* 234-237.

Des Marchais, J.E., Bureau, M.A., Dumais, B., & Pigeon, G. (1992). From traditional to problem-based learning: A case report of complete curriculum reform. *Medical Education, 26,*190-199.

Des Marchais, J.E. (1993). A student-centred, problem-based curriculum: 5 years' experience. *Canadian Medical Association Journal, 148,* 1567-1572.

Perkins, D.N., & Salomon (1989). Are cognitive skills context bound. *Educational Researcher, 8 (1),*16-25.

Resnick, L.B., & Klopfer, L.E. (1989). *Toward the thinking curriculum: Current cognitive research.* Alexandria: Association for Supervision and Curricular Development.

Schlechty, P.C. (1990). *Schools for the 21th century.* San Francisco, CA: Jossey-Bass.

Schulman, L.C. (1987). The wisdom of practice: Managing complexity in medicine and teaching. In: D.C. Berliner, & B.V. Rosenchine (Eds.). *Talks to teachers.* New York, NY: Random House.

World Health Organization (1992). *Changing medical education and medical practice.* Bulletin no. 2, Geneva, Switzerland: World Health Organization.

Annals of Community-Oriented Education
1994, Vol. 7, 73-78

Facilitating Professional Change in Primary Care

E. Fullard
National Facilitator Development Project
Oxford, United Kingdom

Abstract

This paper describes the role of the Primary Care Facilitator, someone who makes change easier for primary health care professionals. This individual, who understands the work of general practice, helps those practices who are interested in preventive medicine and health promotion to set up and maintain programmes. The history of the facilitator role, the aims, the function, training activities and experience in translating the model to other countries are described.

History

It was in 1981 that the Royal College of General Practitioners in London published a report 'The prevention of arterial disease in general practice' (Royal College, 1981). This report concluded that by applying existing medical knowledge, half of all strokes under the age of 70 and a quarter of the deaths from coronary heart disease could be prevented. The report also concluded that a "prevention nurse" could assist practices in developing their role in reducing arterial disease. Death rates from coronary heart disease and from stroke are still the major cause of preventable premature morbidity and mortality in the UK. The author's role in the initial research project to test the role of the facilitator was to assist practices in setting objectives, training practice nurses in aspects of a screening and monitoring system and setting up audit schemes to monitor progress (Fullard et al., 1984). The author's full title was 'facilitator prevention in primary care', employed by the Oxfordshire Health Authority but funded on a three year project by the Stroke Association, a charity based in London. Although this title may seem rather a mouthful, it does describe the role in facilitating, literally to make easy or easier.

It was Dr Arnold Elliott, a general practitioner in London, who pioneered the facilitating role by visiting his fellow practitioners in inner city practices and helping them by advising them about grants and staffing opportunities to improve their practice premises. This was in contrast with previously methods of circulating policies and recommendations and hoping people would subsequently act on them. Since then, Nancy Dennis has acted as a facilitator in improving liaison between the health authority and general practitioners. She, for example, improved the postal system between the hospital and the general practices.

Request for reprints should be sent to E. Fullard, National Facilitator Development Project, Project Director, HEA Primary Health Care Unit, Churchill Hospital, Oxford OX3 7LJ, United Kingdom.

The author adopted this same helping role in the Oxford Prevention of Heart Attack and Stroke Project, by testing from 1982 to 1985 the contribution that could be made in the initial organisation and training needed to extend preventive medicine in general practice. A community physician (Dr. Muir Gray) and a general practitioner (Dr. Godfrey Fowler) guided the author in establishing a specialist's role. There were statistically significant increases in the preventive medicine activities in the practices that were helped, in comparison with the control practices.

For example, during the study, the increase between intervention and control practices in blood pressure recording was doubled, the recording of smoking habits was quadrupled, and there was a five fold increase in the recording of weight. The model was also applied to other aspects of preventive measures, such as cervical screening and identification and counselling for excessive alcohol consumption (Fullard et al., 1987).

On the strength of that evidence, Oxfordshire Health Authority appointed the author to a permanent post.

Other health authorities and Family Health Service Authorities (FHSAs) throughout the UK were interested in the model and adopted it, mainly on the strength of the public health impact that one person could have in "setting a lot of tops spinning" by visiting practices and changing professional behaviour. The role of the primary care facilitator has widened from its original emphasis on cardiovascular disease to all aspects of preventive medicine and practice organisation; examples include diabetes, HIV/Aids prevention, computerisation, prescribing, mental health promotion, and asthma care.

Concept

The concept of the facilitator has three main themes.

Personal contact. The facilitator visits the practice and adapts the service he or she is offering to suit the individual needs of the practice. Personal contact has been demonstrated as one of the best ways of influencing general practitioner behaviour (Horder et al., 1986) Dr. Muir Gray, in describing the personal qualities needed for a facilitator, suggested that a mixture of charm and ruthlessness with a background in primary care was perhaps a good mixture!

Provision of 'tools of the trade' to make the implementation of the new system or practice easier. The facilitator typically suggests protocols, audit guidelines, methods of recruiting patients, and opportunities for the practice to develop teamwork.

A low cost, simple and easily transferable theme. This model can be used in the most disorganised of practices and in those without computer systems.

Who is the Typical Facilitator?

There are now 319 facilitators covering 84% of the UK population. Each facilitator acts as a catalyst, a resource agent and as a helping hand to practices in his or her district. Typically, a facilitator may have as many as 40 or even 100 practices with whom to work. The latest database on facilitators demonstrates that most facilitators are female (96%), 25% have a first degree and most have two or three previous qualifications before entering the facilitating world. Most are now funded by the Family Health Services Authorities, but others (20%) are jointly funded by the National Health Service (NHS) Trust or District Health Authority and the FHSA. The commonest grade for this post is Nursing Scale 'H' (£19,400). In being asked to describe their role for a recent survey (Bostock, 1992), nearly half of the facilitators mentioned health promotion and training, nurse training and team building were mentioned by one third of all respondents. Team building, practice nurse professional development and teaching groups were the area for which the majority said they had a key responsibility. All these areas were mentioned by more than half of the respondents; almost two thirds of the respondents were involved in coronary heart disease prevention. Policy and planning development was also reported as a key responsibility.

The National Facilitator Development Project

The Oxford Prevention of Heart Attack and Stroke results created sufficient interest nationally to warrant a nationally based programme. The Stroke Association, the Department of Health and the Health Education Authority were crucial in funding training officers based in Oxford, Leeds, Birmingham and London. In 1990 the Project changed its name to the current title (The National Facilitator Development Project) to reflect this national role. The aim is to develop the role of the primary care facilitator by supporting the professional needs of the facilitators and by meeting their training and educational needs.

This is achieved by:

* a national and regional support network;
* offering guidance to employing authorities on the appointment of facilitators;
* maintaining an up-to-date address list of all facilitators - UK and abroad;
* a bi-monthly bulletin to all UK facilitators;
* maintaining a database of facilitators - their profile and professional interests;
* facilitator training - including induction and audit courses;
* developing the role of the facilitator and expanding the use of the facilitator model e.g. mental health promotion;
* providing resources for facilitators and primary health care teams e.g. audit guidelines and health promotion visual aids;
* compiling a bibliography of articles and research relating to facilitation;
* access to publicity and promotion of facilitators at conferences; and
* international promotion of the facilitator models.

Training Needs

In the Bostock survey of 1992, computerisation and team building were two areas in which facilitators felt they needed further assistance. The project maintains flexibility to meet the changing needs of facilitators, for example governmental changes, the current one being the establishment of health promotion banding system, and in equipping facilitators with knowledge of the minimum specification data set for the computerisation of practices. Another example is briefing about the recent publication of the effectiveness and priorities for nurses conducting health checks (ICRF OXCHECK Study Group, 1994; Family Heart Study Group, 1994).

Translation of Facilitation Model to Other Countries

Transferability of the facilitating model is one of the objectives and it is gratifying to report that the HAPP Project , funded by the Netherlands Heart Foundation has been one of the pioneers of the successful international translation of the facilitator model. There are six facilitators with very similar backgrounds to the British system. The preliminary results after one year are as follows: of the 33 facilitator assisted practices 94% had protocols, 75% were systematically registering risk factors, and 84% had started preventive clinics. The name and address contact for the HAPP Project is given in Appendix 1. Similarly the Dietrich Study in the USA(Dietrich et al., 1992) found that a tool kit, tenacity and teamwork provided by a facilitator in implementing an office system could improve early detection and preventive services for cancer (Appendix I for address). Similar work in Australia has evaluated the cost effectiveness of a facilitator in improving smoking cessation. It was found that a facilitator, though expensive, was more effective than either a mail shot or untrained volunteers distributing training packs to general practices(Cockburn et al., 1992).

The Future of Facilitation

The degree of flexibility, that primary care facilitators in the UK have shown in continually adapting and changing their role to meet the equally rapidly changing role of primary care teams, has been one of the chief reasons for the continuation of the facilitator to thrive and multiply. This relatively low cost model of effecting change may well be transferable to many other countries. It is the simple, practical willingness to assist teams to change their behaviour in organisational issues that produces change. Visitors Days are regularly held in Oxford and the National Project holds a list of primary care professionals from many other countries, who have either visited or who have expressed an interest. These names and addresses are available to anyone who wishes to write to the author.

References

Bostock, Y.A. (1992). Survey of *primary care facilitators.* Commissioned by the Health Education Authority. Unpublished. Available from the National Facilitator Development Project.

Cockburn, J. et al. (1992). Randomised trial of three approaches for marketing smoking cessation programmes to Australian general practitioners. *British Medical Journal, 304,* 691-4.

Dietrich, A. et al. (1992). Cancer: Improving early detection and prevention. A community practice randomised trial. *British Medical Journal, 304,* 687-91.

Family Heart Study Group. (1994) Randomised controlled trial evaluating cardiovascular screening and intervention in general practice; principal results of British family heart study. *British Medical Journal, 308,* 313-320.

Fullard, E., Fowler, G., & Gray, M. (1984). Facilitating prevention in primary care. *British Medical Journal, 289,* 1585-7.

Fullard, E.M., Fowler, G.H., & Gray, J. A. M. (1987). Promoting prevention in primary care. Controlled trial of low technology, low cost approach. *British Medical Journal, 294,* 1080-1082.

Horder, J., Bosanquet ,N., & Stocking, B. (1986). Ways of influencing the behaviour of general practitioners. *Journal of Royal College of General Practitioners, 36,* 517-521.

ICRF OXCHECK Study Group. (1994). Effectiveness of health checks conducted by nurses in primary care: Results of the OXCHECK study after one year. *British Medical Journal, 308,* 308-12.

Royal College of General Practitioners. (1981). Prevention of arterial disease in general practice. London: Royal College of General Practitioners. *(Report from General Practice No 10).*

APPENDIX

HAPP PROJEKT

c/o Dr. Bernard Van Dreuth
Katholieke Universiteit Nijmegen
Faculteit der Geneeskunde en Tandheelkunde
Bisschop Hamerhuis
Verlengde Groenestraat 75 Postbus 9101
6500 HB Nijmegen
Tel: 010 31 80 515305

c/o Dr. Van der Wouden
Huisarts Assistentie Preventie Projekt
Rotterdams Universitair
Huisarten Instituut
Mathenesserlaan 264a
3021 HR Rotterdam
Tel: 010 31 425 3338

U.S.A.
Dr. Allen Dietrich
Dartmouth Medical School
Department of Community & Family Medicine
7250 Strasenburgh
Hanover
New Hampshire
03755-3862

Annals of Community-Oriented Education
1994, Vol. 7, 79-92

CURRICULA AND COURSES

Implementation of A Philosophy at Newcastle, Australia

R. L. Henry
The University of Newcastle
Newcastle, Australia

Abstract

The University of Newcastle, New South Wales, Australia, has an innovative five-year programme of undergraduate education. The course is characterised by integration of basic and clinical disciplines, use of small groups, a problem-based approach to education, and particular emphasis on self-directed learning, as well as the acquisition of good interpersonal and communication skills.

At its inception the Faculty identified a series of undergraduate programme objectives which were grouped into clusters referred to as domains. The present curriculum maintains a domain-based structure. Both teaching and assessment is conducted via the five domains, namely Professional Skills; Critical Reasoning; Identification, Prevention and Management of Illness; Population Medicine; and Self-Directed Learning. The overall Newcastle philosophy is of learning for mastery in the five domains.

Introduction

In the House of Commons one afternoon, Churchill was attacking a certain aspect of government policy. Referring to Stanley Baldwin, then Prime Minister, Churchill declared "History will say that the right honourable gentleman was wrong in this matter". After a brief pause he added "I know it will, because I shall write the history". (Fadiman, 1985).

The editor sought a paper on the underlying philosophy of medical education at The University of Newcastle, New South Wales, and how this philosophy is incorporated into a systematic approach to planning, implementation and assessment. Inevitably there is a subjective component to such interpretation. As Churchill indicated, history is not necessarily objective. One view is that life long, generally applicable competences, such as life long learning, adaptability to change, dealing with unfamilar situations, critical reasoning, and making reasoned decisions, are consciously developed over the five year Newcastle curriculum. These generally applicable competences are developed in the context of acquiring profession - specific competences underpinned by the simultaneous study of the basic sciences.

Requests for reprints should be sent to R. Henry, University of Newcastle, John Hunter Hospital, Discipline of Paediatrics, Locked Bag 1, Hunter Region Mail Centre 2310 NSW, Australia

The Beginning

A report of the Committee on Medical Schools to the Australian Universities Commission recommended the formation of a medical school in Newcastle (Karmel, 1973). This medical school would have opportunities for educational innovation and would be a stimulus to develop an academic basis supporting a community orientation for its curriculum (Hamilton, 1992, Hamilton, 1993a).

Professor David Maddison was appointed as the Foundation Dean. Although he commenced duty in January 1975, the first students did not start until 1978. These three intervening years saw the recruitment of a core of foundation staff and the development of the basic principles of the curriculum, of student selection and of faculty administration (Working Papers, 1976, 1977; Neame, 1981; Clarke, 1984). One of the cornerstones of the Faculty was its admission policy for students, with an emphasis on personal qualities and a semistructured interview rather than the traditional selection method in Australian Medical Schools which had relied solely on academic performance. The experimental admission policy has been well documented and will not be considered in detail in this paper (Vinson et al., 1978; Powis et al., 1988; Neame et al., 1992; Powis et al., 1992).

David Maddison emphasized that the Faculty would want to evaluate the quality of its graduates and whether the undergraduate programme had been successful. He espoused the major principle that it is not possible to judge the success of the curriculum in terms of its graduates, unless there have been clearly defined educational objectives against which to measure success or failure. This lead to the development of a series of undergraduate programme objectives. These educational objectives, set out in 1976 and reviewed in 1983 and 1993, have remained the basis of both curriculum and assessment. These objectives (Appendix) were organised into clusters, based upon areas of overlap. These clusters were referred to as Domains. The objectives are organised into five Domains of learning, namely professional skills; critical reasoning; identification, prevention and management of illness; population medicine; and self-directed learning. The critical point to recognise is that both teaching, learning and assessment are conducted through these Domains. The overall Newcastle philosophy is of learning for mastery in the five Domains.

Integration

Before such mastery in each Domain can be achieved, learning needs to be planned, organised, implemented, assessed and evaluated. The traditional medical Faculty consists of a number of departments, such as Anatomy, Physiology, Paediatrics, Medicine, etc. These departments will have Heads who control budgets and own curriculum time and, indeed, often courses. The approach at Newcastle has been different. There is a single department, namely the whole Faculty of Medicine. Professional identity is maintained by the presence of disciplines, namely Anatomy, Behavioural Science in Relation to Medicine, Clinical Pharmacology, Community Medicine and Biostatistics, Environmental and Occupational Health, General Practice, Human Physiology, Medical Biochemistry, Medicine, Paediatrics, Pathology, Psychiatry, Reproductive Medicine, and Surgical Science. Each Discipline is responsible for developing and maintaining a discipline map and documenting the development of that Discipline throughout the five-year undergraduate medical programme. However, rather than the Disciplines being represented by teaching subjects such as Paediatrics, individual Disciplines weave in and out of the curriculum via input into one or more of the Domains. For example, Paediatrics involves special features of Professional Skills, including communication with children and their families and examination of children who may be apprehensive and unco-operative; Critical Reasoning is vital in Paediatrics (as in most other disciplines), and the objectives listed in the Appendix for Domain II are highly relevant. For Paediatrics Identification, Prevention and Management of Illness indicates the need for a corpus of knowledge about children, their behaviour and their illnesses. From the Paediatric perspective, Population Medicine will encompass immunisation, screening for diseases, including phenylketonuria and hypothyroidism, the effects of poverty on child health, and many other issues. Self-directed Learning, or Domain V, is applicable to Paediatrics and all other Disciplines. This will be expanded later in the text.

Problem-Based Learning

Approximately half the students enter the five-year course direct from high school and half with some university experience (not necessarily a completed degree). There are approximately 72 students in each intake. Students are divided into groups of eight to ten and remain in the same group for a year at a time. The programme is fully integrated both vertically and horizontally with no preclinical/clinical division. Teaching is problem-based (Barrows and Tamblyn, 1980), community-oriented, and with early clinical contact.

In Year 1 there are three terms, each of approximately 10 weeks' duration. The focus of learning for Domain III, (Identification, Prevention and Management of Illness) is through working problem tutorials. In the first 20 weeks of the year the theme is homeostasis under stress. Through the study of clinical triggers, students study the mechanisms of homeostasis under stress and the mechanisms of abnormality and damage. Stresses considered are genetic, nutritional, psychological, traumatic, infective, toxic, vascular and neoplastic. Trigger material is usually presented in the form of video tapes from which students identify key issues, postulate mechanisms, develop hypotheses and recognise the need to know more, thus generating learning goals. For example, the first working problem of the medical course begins with a video tape of a child who has developmental delay due to cytomegalovirus infection. The diagnosis is unknown to the students but they fairly readily identify that the child's development is severely retarded. This identifies the need to establish normal from abnormal. They also develop an organiser for thinking about the mechanisms and hypotheses for developmental delay and usually invent a scheme such as prenatal, perinatal or postnatal causes. In the process of this they speculate that there could be genetic abnormalities, congenital infection, environmental toxins and drugs, maternal ill health, metabolic abnormalities, trauma, radiation, etc. The students identify the need to establish learning goals such as what is a cell, how cells can be damaged, what is a virus, and many other issues. These working problem tutorials do not focus on students reaching a diagnosis; rather they concentrate on the process by which students work through the problems and identify cues, mechanisms and hypotheses. The problem acts as a trigger for learning.

The tutor is chosen not for expertise in content but to facilitate the learning process for the group. Students are encouraged to work co-operatively and share learning goals and other activities. The wide variety of backgrounds of the students ensures that each working problem group is a rich resource. After students have studied a working problem and have worked through the learning goals, the whole class is brought together for a number of fixed resource sessions, in which Faculty members try to pull together some of the concepts with which students have been grappling and help to clarify problem areas. These sessions are definitely not designed to be lectures in which material is fed to students so that they can regurgitate it in an examination at a later date; the aim is to be much more interactive and to help provide a framework for further learning and understanding.

Cumulative Learning

Concurrent with the working problem tutorials (six hours per week) students learn in the other Domains. Table I provides an overview of the content by Domain in each of the five years. Problem-based learning in small groups is the main process for learning in Domain III in the first two years of the course. The Faculty adopted a spiral learning process in the curriculum whereby students re-visit topics on a number of occasions throughout the curriculum. This is based on the notion that effective learning needs to be cumulative, repeatedly building on earlier learning, where nothing is ever expected to be learned exhaustively and in complete depth at one time but is built up through repeated exposure. There is a logical progression through each Domain, with vertical integration throughout the curriculum, with the Domain as the controlling force. In the same way there is horizontal integration across each year of the curriculum, and content areas in each Domain are related to each other. Clearly, there is also a major responsibility for each Discipline to ensure both vertical and horizontal integration.

Assessment by Domain

The First Year will serve as an example. In **Professional Skills** the student submits a completed certification sheet on which tutors certify that the student has attended and can satisfactorily carry out prescribed clinical tasks. Each student also has a long case clinical assessment with a simulated patient and with a case presentation and oral assessment. There is also a **Group Task** where each student group is given three hours to approach a new clinical problem. The group is observed by assessors who look at the ability of the group to interact, to generate mechanisms and hypotheses, to plan an enquiry strategy and to define learning goals. At the end of the three hours, the group submits a written report

Table I. Overview of content in each of five domains of learning

	Year 1	Year 2	Year 3	Year 4	Year 5
Domain I	Medical interviewing: physical examination of renal/ gastro-intestinal	cardiovascular, respiratory, neurological, psychiatric, endocrine, haematological	sexuality; refinement of clinical skills	paediatrics, reproductive medicine; patient education and councelling consolidation	consolidation; information transfer, eg compliance aiding strategies
Domain II	critical appraisal of publications and scientific validity of evidence	evidence of causation, association, efficacy of health care systems, intervention in disease	reinforcement of critical appraisal of published papers	patient care in wards	effectiveness of diagnostic tests and strategies for management
Domain III	homeostasis under stress; kidneys, urinary tract and gastro-intestinal system	cardiovascular, respiratory, neurology, psychiatry, endocrinology and haematology	consolidation; subspecialities (eg ENT), ophthalmology dermatology); country term	paediatrics, reproductive medicine, surgery, medicine, general practice	paediatrics, reproductive medicine, surgery, medicine, psychiatry, general practice
Domain IV	needs and recources of individuals and society; basic epidemiology	group project	population aspects of domain III topics; quality of care; health economics	paediatric screening; prevention of cancer other topics related to Domain III	diabetes; alcoholism, cardiovascular disease; ageing dementia
Domain VI	medical informatics; elective own learning task; problem-based-learning (PBL)	elective; extended own learning task; PBL	elective; extended own learning task; PBL	attachment to pregnant woman (Baby in the family attachment); independent learning exercise	elective

BEST COPY AVAILABLE

as part of the group task. **Critical Reasoning** is assessed by students analysing a published paper. **Identification, Prevention and Management** of Illness is tested by written assessments including modified essay questions (Feletti and Engel., 1980), short answer questions and objective structured clinical assessments, elsewhere referred to as objective structured clinical examination (OSCE). For **Population Medicine** each student submits a report relating to the Population Medicine topic studied during the year. There is also a written assessment testing principles of Population Medicine. For **Self-Directed Learning** students have a task in medical informatics which involves manipulation of data on computer or similar basic skills. There is also a student's own learning viva in which students are given a 24-hour period after the group task to investigate a learning goal of their choice, research the topic and then present the information during a 25-minute oral assessment.

Assessments are criterion based and not normatively judged. At the time of preparing written assessments, model answers are also produced by Faculty staff indicating the minimum (or mandatory) level of competence that is required. Student performance is then judged as to whether or not they achieve the mandatory level of competence (MLC). Student performance is rated *Satisfactory or Not Satisfactory* with no attempt to grade students. The philosophy of ungraded passes is seen to be important in maximising co-operation between students and effective teamwork.

Organisation

It should be obvious that these curriculum and assessment processes require considerable co-ordination. One advantage of a traditional medical curriculum is that departments run courses and that the lectures and textbooks define the curriculum. Departments set examinations, and lines of responsibility are clear. In a fully integrated curriculum, such as Newcastle, this system is inappropriate. For example, a modified essay question might have a patient with renal disease as the focus, but discipline input may come from Medicine, Surgery, Microbiology, Physiology, Anatomy, and Biochemistry, to name just a few. This necessitates an administrative organisational structure to ensure that the needs of the curriculum are addressed. The Faculty has a curriculum committee, the Undergraduate Education Committee (UEC) with a number of sub-committees, namely Year and Domain Committees and an Assessment Committee. The membership of the UEC consists of the Chairmen of the Year, Domain and Assessment Committees, and the Assistant Dean for Undergraduate Education. Other members of the UEC are academic staff with responsibility for tutor training and for monitoring and evaluation of the curriculum. Thus the UEC is responsible for development and maintenance of the curriculum, for supervising assessments, for tutor training and for monitoring of the day to day functioning of the curriculum, as well as overall evaluation. The UEC is supported by a team of professionals who form the Undergraduate Education Unit (UEU). This group includes staff responsible for organising the timetable, assessments, clinical attachments in the hospitals, organisation of library and other resource material, as well as obtaining feedback from staff and students. They also assist the academic staff with curriculum development. The recent accreditation of the Medical School by the Australian Medical Council (Hamilton, 1993b) highlighted the importance of the Undergraduate Education Unit in the Faculty structure and commented very favourably on this group. In addition to the UEC and the Undergraduate Education Unit, the Faculty has a Programme Evaluation Committee which looks at outcome evaluation - the quality of the graduates.

Discussion

The development at Newcastle of mastery by Domain with the structure of the course taught and assessed through the undergraduate programme objectives (Appendix 1) might be regarded as strange by some. However, the clear articulation of the undergraduate programme objectives has also helped to ensure that the curriculum does reflect the objectives. Interactional skills have always had a high profile within the curriculum, a reflection of the importance placed upon them in the undergraduate programme objectives. Thus it is pleasing that Newcastle graduates are shown to have better communication skills during internship than graduates from other Australian medical schools (unpublished data). The structure has also enabled areas which do not easily fit into conventional disciplines to be represented in the curriculum. For example Health Law and Ethics (Mitchell et al., 1994) and Nutrition have been identified as strands which are taught throughout the course. These are not discipline-based topics but they are fundamental to medical practice.

There are some unexpected benefits of the lack of departmental structure. Interdisciplinary co-operation has been a feature of research in the Faculty. For example, there is a neuroscience research group with a high national and international profile which consists of staff from a number of disciplines. At both the educational and research level the one - department faculty provides a flexibility that is hard to achieve in more traditional structures.

One issue that is rarely recognised by anyone who is not involved in an integrated, problem-based curriculum is the variety of roles assumed by individual faculty members. For example, as the Professor of Paediatrics, I have a clear academic responsibility related to teaching within my own Discipline. When I have a first or second year student group in working problem tutorials, my role is as a generic teacher rather than discipline-specific. Similarily, acting as a tutor in critical reasoning or population medicine usually means wearing a different hat to the traditional discipline hat (Neame, 1982). There is hazard in this for clinicians who tend to be keenly sought after for professional skills, for critical reasoning, for working problem tutorials, for population medicine, indeed for all aspects of the curriculum. Students need to appreciate these different roles undertaken by individuals. Thus when the working problem tutor is a paediatrician, students need to avoid the temptation to use their tutor as a content expert.

The course is demanding for students. Both vertical and horizontal integration of concepts and knowledge in the curriculum require students to build a solid framework of understanding, onto which can be added new and old concepts. If the details of acid base chemistry are confronted initially in a renal context, the student needs to be capable of integrating this knowledge into respiratory medicine, where acid base chemistry will again be encountered. A good tutor and a good curriculum for cumulative learning will remind students that particular concepts have been studied already on previous occasions. If this is not achieved, the curriculum may look more like a maze than a matrix.

As a Faculty, we have not yet explored how students learn in their individual study time. In particular it is hard to know the extent to which nights and weekends are spent with the excitement and enthusiasm of new ideas being developed, or the extent to which students feel overwhelmed by the volume of work and possibly a sense of isolation in struggling to understand unfamiliar concepts. There are some ways in which the system helps to support the students. The fact that students are in the same working problem group for a year means that they get to know each other well and provide mutual educational and emotional support. Secondly, formative assessment helps students to calibrate themselves against the required standard. Although an open ended curriculum brings with it stress for students, one reassuring fact is that the students as a group are strong supporters of our educational system.

There are two areas where the Faculty has failed to establish a clear policy. The first is a problem imposed from outside by the medical registration system in Australia. All graduates of Australian medical schools must spend a one year internship in a hospital before qualifying for medical registration, and indeed ninety percent work in hospitals for two or more years before entering postgraduate education. In general the experience is in large teaching hospitals, is focused on individual patients and concentrates on acute management. There is little opportunity for community orientation and even less for a community-based internship. The need to prepare for internship means inevitably that in the final two years of their undergraduate programme, Newcastle students concentrate more on acute hospital care and less on outpatient management and population medicine. There is a tacit acceptance of this in the Faculty without a clear vision of how best to address the issue. An unanswered question is whether graduates rediscover the importance of population medicine after the initial postgraduate emphasis on acute medicine.

A second issue relates to the award of Honours. In the first three years of the course, all assessments are marked as *Satisfactory or Not Satisfactory*, with no graded passes. The rationale has been to minimize competition and to maximise co-operation between students. Many assessments are group assessments and the lack of graded marks is thought to enhance the group process. However, the Faculty has taken the view that the top students in each graduating year should be awarded Honours to ensure that the best students receive the most favoured intern placements, to ensure parity with the rest of the University and with other medical Faculties, and because of a belief that entry to doctoral degree programmes and access to external research support is difficult without Honours. This has meant that in the final two years of the course many of the assessments contribute towards an Honours mark. Consistent with the underlying assessment philosophy, the award of Honours is based upon performance in Domains. In order to be considered for Honours, students must achieve marks well above the MLC (Mandatory Level of Competence) in at least four of the five Domains. However, in spite of adhering to the Domain based assessment, one effect of Honours is that some competition is introduced in the senior years after it has been avoided for the first three years. The presence of Honours in the Newcastle curriculum has always been controversial with both students and staff. The majority of staff and students believe that, on balance, it is the right thing but considerable ambivalence is present. External review has recognised that ambivalence (Hamilton, 1993b).

The domain-based approach to learning and assessment has been a major feature of the undergraduate medical course at The University of Newcastle. The fact that three of the other nine medical schools in Australia (Flinders University, Sydney University and University of Queensland) are changing to a problem-based curriculum is regarded as a confirmation of this teaching strategy. At least one of these medical schools (Sydney) has identified domains similar to those at Newcastle. The domain- based, rather than departmental structure maximises opportunities for integration of basic and clinical sciences, helps the Faculty to focus on ensuring that the curriculum reflects the programme objectives and provides a framework that is flexible to change in curriculum content.

Acknowledgements

I wish to thank Professor John Hamilton, Dean of the Faculty of Medicine, for his helpful comments and advice, and Joan Welsh for typing the manuscript.

References

Barrows, H.S., & Tamblyn, R.M. (1980). Problem-based learning. New York, NY: Springer Publishing Co.

Clarke, R.M. (1984). Organizing an institution to deliver educational programmes designed to achieve capability. *Journal of Programmed Learning and Educational Technology, 21,* 301-306.

Faculty of Medicine (1976, 1977). *Working papers.* Newcastle, Australia: University of Newcastle.

Fadiman, C. (Ed.). (1985). *The Faber book of anecdotes.* Winchester: Publisher Faber & Faber, p122.

Feletti, G.I., & Engel, C.E. (1980). The modified essay question for testing problem-solving skills. *Medical Journal of Australia, 1,* 79,-80

Hamilton, J.D. (1992). A community and population-oriented medical school: Newcastle, Australia. In: K.L. White, & J.E. Connelly (Eds). *The medical school's mission and the population's health.* New York, NY: Springer Verlag.

Hamilton, J.D. (1993a). *Community orientation: Ups and downs at Newcastle, N.S.W.* Annals of Community-Oriented Education, 6, 35-42. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Hamilton, J.D. (1993b). *Medical school accreditation: The Australian experience.* Annals of Community-Oriented Education, 6, 231-242. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Karmel, P. (1973). *Expansion of medical education.* Report of the Committee on Medical Schools to the Australian Universities Commission. Canberra, Australia: Australian Government Publishing Service.

Mitchell, K., Myser, C., & Kerridge, I.H. (1994). *An integrated ethics programme in a community-orented medial school: Newcastle, Australia.* Annals of Community-Oriented Education, 7, ???-???. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Neame, R.L.B. (1981). *Task force on organisational structures.* Network of Community-Oriented Educational Institutions for Health Sciences. Newcastle, Australia: University of Newcastle.

Neame, R.L.B. (1982). Academic roles and satisfaction in a problem-based medical curriculum. *Studies in Higher Education, 7,* 141-151.

Neame, R.L.B., Powis, D.A., & Bristow, T. (1992). Should medical students be selected only from recent school-leavers who have studied science? *Journal of Medical Education, 26,* 433-440.

Powis, D.A., Neame, R.L.B., Bristow, T., & Murphy, L.B. (1988). The objective structured interview for medical student selection. *British Medical Journal, 296,* 765-768.

Powis, D.A., Waring, T.C., Bristow, T., & O'Connell, D.L. (1992). The structured interview as a tool for predicting premature withdrawal from medical school. *Australian and New Zealand Journal of Medicine, 22,* 692-698.

APPENDIX

Undergraduate Programme Objectives

The Programme Objectives act as:
- a basis for curriculum development by the Faculty, and a yardstick for decisions about inclusion or exclusion of particular activities in/from the curriculum;
- an overall statement of goals for students, and a framework within which to set their own efforts;
- the overt basis for the assessment of student progress and achievement;
- one of the yardsticks for evaluation of the programme.

However, they do not specify the full range of curriculum development. Responsibility rests with the Faculty to develop a learning environment of acceptable quality and to choose relevant educational content. The notion that the learning environment should be happy and constructive cannot be expressed easily in objective form. In addition there are several aspirations which the Faculty holds which cannot be mandated. Thus the Faculty may wish students to maintain a range of values and attitudes such as caring, willingness to help, and dedication, but it is not possible to insist upon these values and yet concurrently adhere to a liberal educational philosophy. This is not to deny their importance, but rather to distinguish them from performance which is the concern of behavioural objectives. In this sense the UPOs identify the behaviour expected of students in the way they carry out the performance of their intellectual and clinical responsibilities (eg 1.1).

The Objectives
They are designed to ensure that, at the conclusion of the course, the graduate demonstrates the ability to:
- engage in productive professional relationships and maintains those relationships to acquire, evaluate and communicate information;
- apply the processes of critical reasoning to medical care;
- apply his or her understanding of illness to its prevention, identification and management and to the promotion and maintenance of health;
- apply his or her understanding of the practice of medicine in a community or population context;
- take responsibility for evaluating his or her own performance and implementing his or her own education.

These objectives assume a dynamic environment in which medicine will be practised. In consequence the graduating student should be able to participate in change and to adapt to change.

Domain I - Professional Skills

1. By the time of graduation students demonstrate ability to relate to, and function in an effective fashion with, patients and their families as well as fellow professionals by:

1.1 manifesting those personal characteristics essential for the practice of excellent medicine, including (i) an awareness of their own assets, limitations and responsiveness, (ii) responsibility, thoroughness, reliability and confidentiality, (iii) sensitivity to the needs of others and concern for other persons;

1.2 consistently displaying a deep regard for others, thereby showing that caring and comforting are held to be amongst the appropriate tasks for a medical practitioner;

1.3 showing that their approach to all patients reflects an understanding that the person who is ill is more important than the illness from which he or she suffers;

1.4 applying in an observable way both an understanding of the importance of the doctor/patient relationship, and its place in the provision of medical care at all levels;

1.5 showing, (i) an enlightened involvement with patients, free from undue interference with communication created by the excessive use of psychological defence mechanisms, thus avoiding the demonstration of aloof and unfeeling detachment, undue aggression and other unhelpful behaviours, (ii) a recognition of those patients who display dependency or hostility to an extent which affects patient management and patient co-operation, and interacting appropriately with them, (iii) an awareness of how their own personality affects their interaction with their patients and how their own anxieties and prejudices may alter patient attitudes and behaviour, (iv) a capacity to accord with ethical principles which restrain practitioners from taking advantage of patients;

1.6 applying an awareness of the role of the physician in health/welfare professional teams and working co-operatively within them;

1.7 showing the establishment of effective communication and co-operation with a wide variety of patients, healthy members of the community and other professionals;

1.8 applying an awareness of the potential conflicts imposed upon them by their obligations to themselves and their family, to their patients and the community they serve;

1.9 applying an understanding of the ethical basis of medical practice;

1.10 applying a logical and probabilistic approach to clinical problems, and displaying a tolerance for ambiguous situations by coping with uncertainty in the clinical context;

1.11 applying skills in interacting with patients to increase the probability of accurate diagnosis, patient satisfaction and compliance, and the patient's accurate recall of supplied information, and to decrease the anxiety associated with potentially threatening medical interventions;

1.12 obtaining a clinical history from a wide variety of patients, and eliciting clinical signs through the conduct of physical examination - these skills should be demonstrated with both adults and children;

1.13 writing an accurate clinical record on the basis of their own observations, recognising and defining a clinical problem, and communicating their findings to others clearly and concisely (orally and/or in writing);

1.14 carrying out the basic tasks required to be performed by all medical graduates during their pre-registration post-graduation period.

Domain II - Critical Reasoning

2. By the time of graduation students will demonstrate ability to apply the processes of critical reasoning to medical and other health care, with specific ability to apply the processes of scientific reasoning by:

2.1 precisely defining a health problem, related to an individual or to a community, and stating what information is required to resolve the problem, efficiently searching the relevant literature and selecting the best and most appropriate research by application of rules of evidence to determine its validity;

2.2 applying a critical appreciation of the techniques, procedures, goals and results of biomedical research including not only that carried out in the laboratory, but also that based on population and group studies;

2.3 interpreting diagnostic and other tests in terms of their likely contribution to diagnosis, prognosis and management of the health problems of individuals, and evaluating the validity of such tests in early diagnosis, and other community based programmes;

2.4 interpreting and evaluating data generated by studies of medical and other health services supplied to communities and populations;
2.5 assessing the degree to which assertions concerning health matters made in the medical and lay press are well-founded on scientific evidence.

Domain III - Identification, Prevention and Management of Illness

3. By the time of graduation students will demonstrate ability to apply their understanding of illness and its prevention and management, by:
3.1 applying an understanding of the mechanism and significance of health-related physical and behavioural events and adaptive responses to those events, both normal and abnormal, at levels ranging from the molecular to that of the community and wider environment;
3.2 applying an understanding of biological, psychological, social, developmental and environmental mechanisms to the diagnosis, management and prevention of illness;
3.3 applying a knowledge of the significance and limitations of the findings of standard laboratory and allied investigations;
3.4 planning and interpreting a programme of investigations appropriate to the clinical problem presented by the patient, with due regard for patient comfort and safety and for economic factors;
3.5 applying the understanding implicit in 3.2, 3.3 and 3.4 to the diagnosis of a defined range of clinical problems;
3.6 applying an understanding of the principles of therapeutics, including the possible complications and human costs of treatment;
3.7 taking responsibility, under supervision for the management of a defined range of common, acute and chronic clinical conditions;
3.8 devising and implementing, under supervision, a management programme appropriate for patients with chronic, intractable illness, including terminal disease;
3.9 carrying out the basic psychomotor tasks required to be performed by all medical graduates during their pre-registration post-graduation period;
3.10 applying an understanding of the impact of illness upon families, and the importance of family factors in prevention, treatment and rehabilitation;
3.11 demonstrating a positive, consistent and informed behaviour towards promotion and maintenance of health, as well as the prevention of illness at both individual and population levels, and skill in educating patients, their families and other health professionals for this purpose;
3.12 applying an awareness that major changes in individual and community health are likely to depend as much or more on change in the behaviour of people as on the manipulation of the physical environment.

Domain IV - Population Medicine

4. By the time of graduation students will demonstrate ability to apply their understanding of the practice of medicine in a community or population by:
4.1 applying an awareness of the importance of the practice of medicine in both community settings and in hospital settings;
4.2 contributing to the identification and solution of community health problems and to the evaluation of the results of such interventions;
4.3 applying knowledge of the incidence and prevalence of disease in the Australian community;
4.4 applying an understanding of the organisation of the Australian health care system, as

exemplified by that existing in the Hunter Region, at primary, secondary and tertiary care levels, from conception to death, including the care of the chronically sick of all ages, and including treatment, prevention and the promotion and maintenance of health;

4.5 evaluating health care needs of individuals, groups and communities, and evaluating the efficacy of health care delivery and the functioning of community health services;

4.6 applying an understanding of the impact of illness upon families, and the importance of family factors in prevention, treatment and rehabilitation;

4.7 applying a positive, consistent and informed behaviour towards promotion and maintenance of health, as well as the prevention of illness at both individual and population levels;

4.8 applying an awareness that major changes in individual and community health are likely to depend as much or more on change in the behaviour of people as on the manipulation of the physical environment;

4.9 applying an awareness of the role of the physician in health/welfare professional teams, and working co-operatively within them.

Domain V - Self-Directed Learning

5. By the time of graduation students will demonstrate ability to take responsibility for evaluating their own performance, implementing their own education and contributing to the education of others, by:

5.1 monitoring, granted appropriate consultation, their own progress in the acquisition of information and skills;

5.2 monitoring and evaluating, for the purpose of mutual education, the performance of their juniors and their peers;

5.3 engaging in a critical evaluation of the objectives and implementation of the Faculty's education programme;

5.4 being educationally prepared to undertake postgraduate training;

5.5 demonstrating that medical education in its full sense is a lifelong activity and investing time in the maintenance and further development of their own knowledge and skills, above and beyond the pursuit of higher professional qualifications.

Annals of Community-Oriented Education
1994, Vol. 7, 93-99

A Curriculum for Training Minority Physicians for Rural and Pastoral Areas in Xin Jiang

Yanjun Feng and Yaoxin Zhang
Xinjiang Medical College
Xin Jiang, People's Republic of China

Abstract

This paper describes a new three-year programme to train minority Primary Health Care physicians to respond to maldistribution of health professionals and the current health status. The educational philosophy of the programme is community-oriented and problem-based learning; assessment of students emphasizes knowledge and competence. A special policy for the selecting of minority students was introduced for the new programme. The authors anticipate that the programme can become a model for the training of minority physicians in China.

Introduction

Xinjiang (XJ) is a region inhabited by people of many different nationalities. It is located in the North West, and it is one of the poorest areas in China. It has a population of over 15 million of whom 72.5% live in rural and pastoral areas (RPA), and 62.4% are minority people[1] (XJ Yearbook, 1990). Because of its undeveloped economy and remote geography, the health profile of RPA are characterised by a higher incidence rate and mortality of infectious, epidemic and endemic disease than other areas of China. It has been reported that infectious disease and malnutrition-related diseases were the leading causes of infant and child morbidity and mortality (XJ Yearbook, 1988). There is an extreme shortage of health care workers, both in quantity and quality in RPA. The average number of doctors per thousand population is 4.5 in Urumqi, the capital of Xinjiang, but only between 0.45 and 0.85 in RPA. Also, the number of minority health workers makes up only 30% of all health workers in Xinjiang (XJ Yearbook, 1990). Thus, the number of minority health workers is not proportional to the population as a whole.

Xinjiang Medical College (XJMC), founded in 1956 in Urumqi, XJ, has trained thousands of graduates for XJ, but most of them are working in city hospitals (Feng Yanjun, 1988). Like other developing countries, health manpower distribution is seriously imbalanced, yet XJMC has only a five-year training programme similar to Flexner's model. Because of the limitation of the traditional model (Smilkstein, 1977) the graduates of the traditional

---

[1] These nationalities are classed as minorities if they constitute less than 10 percent of the country's Han population.

Requests for reprints should be sent to Yanjun Feng, Beijing Xinjiang Medical College, Xin Yi Road 8, Urumqi, Xinjiang 830054, People's Republic of China.

curriculum have not been provided with the knowledge, skills, practice and attitude needed in RPA. In order to fulfil the goals of "Health for All by the Year 2000", Chinese central and local governments have urged medical schools to establish programmes that orientate to rural and remote areas. XJMC plans to set up a new three-year curriculum for training minority physicians for RPA, in order to radically change the maldistribution of health manpower and improve health care in RPA.

The Three-Year Curriculum for RPA

The curriculum incorporates strategies that combine community-orientation and problem-based learning to achieve the following objectives.

1. To provide curative and preventive care to individuals and groups in health and sickness, maternal-child care and family planning.
2. To diagnose and manage common diseases, specially endemic, infectious and chronic diseases of RPA.
3. To provide appropriate primary management for emergencies and seriously ill patients, as well as the terminally ill within the available health care services and resources.
4. To apply basic principles in health education to assist in promoting health, disease prevention and rehabilitation, based on the needs of the local social, religious and cultural values which can influence the status of health and disease.
5. To be a competent, motivated and independent learner who can recognise his/her educational needs, to choose appropriate learning resources and conduct self-assessment of his/her educational progress.
6. To show a concern for the health status of RPA and motivation to devote himself/herself to the improvement of health care in RPA.
7. To function as an effective member or leader of a health care team, and to work to preserve good and effective relationships with both colleagues and other allied health workers and patients.

Student selection

Applicants must be members of one of the minorities and have a good RPA high school record. They must be willing to return to their home town after graduation. The applicants must demonstrate a desire to practise with and for the rural population. They may then be admitted to the new programme even with a low admission score in the university entrance examination.

Content and organisational framework

The new three-year curriculum has three parts: First Year - preclinical science and community medicine; Second Year - clinical medicine and community medicine; and Third Year - clinical rotation (Table I).

Preclinical Science in the First Year is divided into two Terms. In Term 1 students will study normal and abnormal human sciences such Anatomy, Histology and Embryology, Physiology, Biochemistry, Pathology, Microbiology, Parasitology. These subjects will be integrated and taught by interdisciplinary teachers, so that the students will acquire systematic and integrated knowledge of the human body as in other Chinese medical schools (Jiujiang, 1988). In Term 2 the goals for integrated causes are to produce students with an understanding of major mechanisms of illnesses and treatment of diseases through the right use of medicine.

Table I. The three year curriculum for minority students

	Term 1			Term 2		
	Sep. Oct. Nov. Dec. Jan.	Feb.	Mar.	Apr. May June July Aug.		
YEAR 1	Community Medicine I Normal Human Structure Normal Human Function Early Patient Contact Medical Information Sciences Physical Culture Elective	EVALUATION	VACATION	Community Medicine II Pathogenic Biology Pathology Pharmacology Early Medical Contact Physical Culture Elective	EVALUATION	VACATION
YEAR 2	Community Medicine III Clinical Skills Medicine Surgery Elective Traditional Chinese & Uygur Medicine	EVALUATION	VACATION	Community Medicine IV Medicine Surgery Obstetrics & Gynaecology Paediatrics Emergency Medicine Traditional Chinese & Uygur Medicine	EXAMINATION	
YEAR 3	Clinical Rotation (32w) in Teaching Hospital Medicine 10w Surgery 10w Ob/Gyn. 6w Paediatrics 6w			Rotation Sites (16w) County Hospital 12w Clinics or Health Station 4w Medicine & Paediatrics Surgery & Obstetrics and Gynaecology Prevention, Health Education Family Planning	EXAMINATION	

Community Medicine. The goal is to produce graduates who are competent and comfortable primary health care (PHC) practitioners in RPA. Community medicine throughout the whole of the curriculum is a four-phase, integrated course. Community

Medicine I introduces the concepts and duties of PHC, the current health status in RPA, society, economics, law, religious and social customs, and psychology pertaining to medicine. It is designed to help students to understand the RPA they will serve and the duty they will undertake as a PHC physician, especially to stimulate learning and to nurture affection for the RPA's people. In Community Medicine II students will learn preventive and environmental medicine, and health statistics. Groups of students will do research in the community, collecting health, social and demographic data. They will meet with their supervisor to discuss the main health problems they have encountered. This exercise will enable students to apply their knowledge and the methods of preventive medicine. The purpose of Community Medicine II will be to improve students' basic concepts and competence in social and preventive medicine in the community, family and with individuals, so that students develop an understanding of the status of PHC in community settings. Community Medicine III and IV deal with major clinical and preventive medicine. Most infectious, endemic diseases occur in RPA rather than in the cities. The students will treat more patients and have more opportunities to diagnose and practise clinical skills. Community Medicine III and IV also include maternal-child care, family planning, health education, and immunisation.

Early Medical Contact. This course occupies half a day every other week throughout the First Year. It includes basic nursing, communication with patients, and application of clinical techniques. The purpose is to let students appreciate the relationship between basic and clinical medicine through early patient contact.

Clinical Medicine. The content of clinical medicine is closely concerned with the disease spectrum as determined by morbidity and mortality analyses in RPA. Prevention of diseases in clinical practice is integrated in each course, especially prevention of endemics, epidemics, and chronic disease.

Traditional Chinese and Uygur[2] Medicine. These have many advantages: they are readily available at low cost, do not require complicated and high technological resources, and are easily accepted by the local people (Li Cunchang et al., 1990). The goal of this course is to prepare students for diagnosis and treatment not only with Western medicine, but also with traditional Chinese and Uygur medicine.

Emergency Medicine. To give students competence in treating emergencies, especially those frequently occuring in RPA, such as shock, trauma, and pesticide poisoning.

Clinical Rotation. Students will rotate through Medicine, Surgery, Obstetrics and Gynaecology, and Paediatrics at teaching hospitals and community sites to consolidate their knowledge and skills acquired in the previous years.

During the clerkship the students will be given opportunities to deal with clinical and health problems of the community scientifically and humanely, and to undertake PHC responsibilities under conditions that are simple and crude at community sites. During the last four weeks of the clerkship at community sites, students will be required to take part in the work of the preventive clinic, maternal-child care centre, and family planning centre, as well as in villages or schools. They will survey and carry out some health projects in prevention and health promotion. At the end of the four weeks each student will have to present a report or plan of a project in which s/he will have been involved.

Methods and assessement

Teaching Methods. During the First Year the predominant teaching methods are lectures (60%), laboratory (20%), and group discussions (20%). In Term 2 lectures will be reduced to 40% and group discussions increased to 25-30%, self-directed learning 10-15%, and laboratory 20%.

In clinical courses the Problem-Based Learning (PBL) will become the main approach to learning. The teaching methods employed in these courses are group discussions and tutorials (60%), self-directed learning (20%), and lectures (20% or less).

Assessment. At the end of each course, students will be assessed on their ability to master basic knowledge and apply it to solve problems with a combination of assessment instruments, such as short answers, matching item, Multiple Choice Questions, and Modified Essay Questions. The process of PBL and the community experience are also evaluated with a rating scale and check list. The results of students' assessment are summative for each course and formative within the learning process, especially in community medicine and early medical contact.

Students' participation in discussions and interpersonal skills during small group sessions will be assessed by teachers and peers with a rating scale and check list. Students' attitude to people and to work in PHC is also assessed with rating scales during their rotations and community practice.

The students' performance in clerkships is graded as "honours", "satisfactory", "unsatisfactory", or "incomplete". After clerkship rotation, students must take part in the graduation examination which is a comprehensive, integrated test, including knowledge, competence and attitude in PHC.

Preparation for the New Programme

Implementation of the new programme in an established school is likely to meet with a great deal of resistance, in addition to problems of limited finance and the need for the construction of community teaching sites. For the former, faculty development with conferences, workshops and symposia on reforms in medical education will be critically important in order to change the Faculty's philosophy. Groups of teachers will be sent away to learn innovative approaches. Meanwhile, learning materials for the curriculum will be compiled by experienced teachers. In setting up community sites in RPA, XJMC is going to approach the Primary Health Care system in local communities to get their support and involvement.

Programme Evaluation

The plan includes not only a short-term evaluation, but also a long-term evaluation of the new programme. The main short-term evaluation will pay attention to graduates' learning achievements. The evaluation of the long-term goal, to produce minority physicians who are competent to practise PHC in RPA will be carried out in three, five or ten years after graduation. The evaluation will not only be by means of questionnaires and interviews, but also through quasi experimental studies to evaluate whether or not priority health problems in RPA are being resolved by the graduates of the new curriculum.

Discussion

There are many issues in Chinese medical education, but the most important issue is how to train large numbers of physicians who can undertake the task of PHC and who will stay and serve in vast rural, remote and underserved areas.

The new curriculum for training minority physicians for RPA is designed on the needs of PHC in RPA. It uses some of the successful experiences of community-oriented medical schools (Lipkin, 1989) in China and elsewhere. The new curriculum is very different from the traditional three-year medical course in relation to educational objectives, curriculum design, content, sequence, instructional and assessment methods.

The traditional model of medical education has been in use for over eighty years (Lipkin, 1989), so that it is not easy to implement the new curriculum, even though it is not entirely innovative. The authors consider that the main resistance comes from the teachers, yet the teachers are the key and most active factor in reform. The new curriculum cannot be implemented without the necessary instructional resources, equipment and basic community teaching sites. Local governements and communities must be involved in, and actively support the curriculum.

Acknowledgement

The authors thank Barbara Barzansky, and other colleagues, Thomas v. Telder, Abdul Sajid, Betty Risley, Professor Ma-Xu, and Professor Ma Min-gang for their guidance and assistance in the development of the programme.

References

Feng Yanjun (1988). Enlightenment of reforming medical education in XJMC from surveying 1409 graduates. Medical Education (Chinese), 7, 11-16.

Jiujiang Medical Schools (1988). Reforming 3-year medical education to train physicians for rural areas. *Medical Education (Chinese), 4,* 8-9.

Li Cunchang, Wu Yuntao, & Yang Dexing (1990). Analysing structure of intelligence of Chinese medical students in medical education. *Medical Education (Chinese), 2,* 15-17.

Lipkin, M. (1989). Toward the education of doctors who care for the needs of the people: Innovative approaches in medical education. In: H.G. Schmidt, M. Lipkin, & J.M. Greep (Eds.). *New directions for medical education.* New York, NY: Springer Verlag.

Smilkstein, G. (1977). Extramural training of medical students: Lessons from Southeast Asia. *Journal of Family Practice, 4,* 873-876.

XJ Yearbook (section on health) (1988). Urumqi, XJ, China: XJ People Press.

XJ Yearbook (section on health) (1990). Urumqi, XJ, China: XJ People Press.

Annals of Community-Oriented Education
1994, Vol. 7, 101-106

Faculty Views on the Development of a Three Year Curriculum for Traditional Chinese Medicine

Qiao Wangzhong
Beijing College of Traditional Chinese Medicine
Beijing, People's Republic of China

Abstract

This paper discussed the reasons why China develops 3-year rural Traditional Chinese Medicine programmes. The development of the 3-year rural programme is a major approach to solving the serious shortage of health manpower in rural areas. It is suitable for the situations of China and conforms with the goal of "Health for All by the Year 2000". The curriculum and the objectives of the 3-year rural Traditional Chinese Medicine programme are presented, together with the views of 44 faculty members. The results of the questionnaire showed that most of the respondents favoured developing the programme and thought the curriculum to be feasible.

Introduction

China has a population of about 1.16 billion and over 80 percent live in rural areas. Although China has trained over 700,000 medical students since 1949, the lack of doctors is still serious in rural areas. Few of these doctors have received higher medical education, and the quality of health care services in rural areas is lower and poorer than in the cities. Farmers tend to go to city hospitals and bypass their local rural hospitals. Experience of the past four decades has proved that the training of 5-year medical students for rural areas is not successful. It is impossible for China to meet rural health needs and to attain Health for All by the year 2000 by merely relying on training 5-year medical students.

The development of a 3-year medical education programme as a way of solving the problem was suggested. However, most of the Traditional Chinese Medicine (TCM) colleges still place emphasis on training 5-year students and post-graduates who meet the needs of urban hospitals, while neglecting training for rural areas. As the opinions about the development of the 3-year rural TCM programme and its curriculum have not been studied systematically, the present survey was conducted.

Rationale for Developing the 3-year Rural TCM Programme

Three-year TCM education is at a special level of higher education in China, and its development is mainly due to the health needs in rural areas. It is one of the strategies for solving the shortage of health manpower and for enhancing the level of health services in rural areas.

Requests for reprints should be sent to Qiao Wangzhong, Beijing College of Traditional Medicine, Student Office, Hepingjie Beikou, Beijing 100029, People's Republic of China.

1. The majority of 5-year graduates are unwilling to go to rural areas and stay there.
   Most of the 5-year students come from urban areas and find it unacceptable to be assigned to rural areas, due to the disparity in economic, cultural and living conditions between the city and the countryside. Moreover, rural youths have fewer opportunities to enter colleges than urban youths through keen competition in the national entrance examination.
   There are no advanced facilities or good working conditions in rural hospitals as compared with urban hospitals.
2. Traditional medicine is still very popular and plays an important role in the prevention and cure of diseases, particularly in rural areas. TCM is easy to practise, diagnose and manage with few side-effects, and inexpensive.
3. A three-year programme *per se* has advantages, such as shorter duration, less costly, immediate effectiveness and outstanding practicality. The programme is orientated to train health personnel for country and town hospitals, and all students are enrolled from specific rural areas, particularly poor, remote or minority nationality regions. All graduates will go back whence they came and work in county or small town hospitals.
4. China is a developing country, so that its policies dependent on its resourses, instead of applying automatically the model used in developed countries. At present, developing a 3-year medical education programme is a rational and effective approach for rural areas.

Objectives and Curriculum of the 3-Year Programme

The 3-year rural TC programme is part of community-oriented, primary health care education. The objectives of the programme relate to the health needs in specific rural areas through community analysis. The general goal of the 3-year rural TCM programme is to train health workers who are responsible for prevention and cure and who can meet the health needs of rural communities. The requirements for 3-year programme students include essential knowledge, ability for life-long learning, ability in the diagnosis and treatment of diseases, and ability in community health care. After graduation, the student should be able to:

diagnose and treat common and frequently-occuring diseases;
elicit case histories and keep medical records;
analyse physical and chemical test reports;
give emergency treatment;
offer health education;
offer treatment of common diseases and carry out prevention in rural areas as a member of a mobile medical team;
make full use of existing facilities and resources;
maintain the relationship between physician and patients; and
collect information and acquire new knowledge and skills.

The 3-year TCM programme has 26 courses with a total teaching time of 1900 hours. The first year covers the basic medical sciences including the basis of TCM, TCM diagnosis, science of Chinese materia medica and TCM formulary.

Basic Western medicine includes anatomy, physiology, biochemistry, microbiology and parasitology, pathology and pharmacology. Other courses are physical education, politics and ethics, ancient Chinese medical prose and Latin.

The second year covers the clinical courses in hospitals. Students are taught clinical knowledge and skills in the TCM and Western medicine models. The Western medicine courses include internal medicine, surgery and emergency treatment. The TCM courses include internal medicine, surgery, gynaecology, paediatrics, otolaryngology and acupuncture.

The third year is for the clinical clerkships. Students rotate within departments of Western medicine and TCM, both secondary and primary hospitals are included, with two weeks of community activities every term. The community activities include visiting rural families, conducting epidemiological studies, and working in township hospitals.

Opinions of Experts on the Programme

Methods

A questionnaire was designed by the author based on a series of informal interviews and a pilot study.

Fifty-one faculty members were chosen randomly. In determining the sample, the professional rank and the teaching responsibilities of the individuals were considered. The 51 respondents were chosen from 210 faculty members who had senior or middle professional titles in four units of Beijing College of TCM. Percentages and the Chi-square test were used in the analysis of the responses.

Results

The questionnaires were completed by 44 subjects, a response rate of 86.3%. 34.1% were Professors or chief physicians, 40.9% were Associate Professors or vice chief physicians, and 25.0% were lecturers or physicians in charge. Twenty were teachers of basic sciences; 18 were teachers of clinical sciences; with two administrators and four educational researchers. Among the 20 teachers of basic sciences, 12 were teachers of TCM basic sciences, and eight were teachers of Western medicine. The survey explored their views on developing the 3-year rural TCM programme and their perceptions on the new curriculum (Tables I and II).

Six "yes-no" questions were also posed. The respondents were classified into three groups - the basic medical science group, the clinical science group, the administrators and the educational research fellows group. Chi-square test was used to determine whether or not the three groups were independent in their views on these questions (Table III).

Table I. Views of faculty members on the development of a 3-year programme

Statements	Agree		Disagree		No opinions	
	n	%	n	%	n	%
1. Developing a 3-year TCM education in China is well worth trying	43	97.7	0	0	1	2.2
2. Developing a 3-year TCM education suits China's conditions	37	84.1	1	2.2	6	13.6
3. Developing a 3-year TCM education is a major approach to solve the shortage of health manpower in rural China	40	90.9	1	2.2	3	6.8
4. The strengths of a 3-year TCM education outweigh its weaknesses	34	77.3	0	0	10	22.7
5. The courses offered by a 3-year TCM Programme should be identical with the 5-year programme	11	25.0	24	54.5	9	20.5
6. A 3-year TCM programme should adopt innovative educational strategies differing from traditional ones	27	61.4	5	11.4	12	27.3
7. Developing a 3-year TCM programme can make full use of existing resources	44	100	0	0	0	0
8. 3-year TCM graduates can meet the basic health demands of rural areas at present	38	86.4	0	0	6	13.6
9. TCM colleges should concentrate on training 3-year graduates for rural areas	39	88.6	0	0	5	11.4

Table II. Perceptions of faculty members about the curriculum

Statements	Agree		Disagree		No opinions	
	n	%	n	%	n	%
1. The defined objectives conform with the reality of a 3-year education	43	97.7	0	0	1	2.2
2. All courses are necessary	35	79.5	4	7.2	5	11.4
3. The order of courses is logical	34	77.3	6	13.6	4	7.2
4. The allotment of three years is reasonable on the whole	31	70.5	5	11.4	8	18.2
5. Enrolling 60 students for each class is basically moderate in size	30	68.2	10	22.7	4	9.1
6. It is suitable to select the prefecture and county hospitals as 3-year students' clinical settings	42	95.4	0	0	2	4.6
7. It is good for students to have contact with rural health problems at an early period	44	100	0	0	0	0
8. The 3-year TCM curriculum is significantly different from the 5-year programme	42	95.4	2	4.6	0	0
9. The plan equips 3-year students with essential knowledge and skills for work in rural hospitals	38	86.4	0	0	6	13.6
10. On the whole, this plan of developing a 3-year TCM programme is feasible	39	88.6	0	0	5	11.4

Table III. Experts' views on the 3-year curriculum

Questions	Yes		No		No answer		X^2
	n	%	n	%	n	%	
1. Are the defined objectives appropriate?	37	84.1	4	9.1	3	6.8	0.836 $p<0.05$*
2. Is the curriculum suitable for the training of rural health personnel?	40	90.9	3	6.8	1	2.3	0.774 $p<0.05$*
3. Are prefecture and hospitals suitable for 3-year students' clinical clerkships?	39	88.6	5	11.	0	0	1.452 $p<0.05$*
4. Can the 3-year rural TCM programme apply the same strategies used in the 5-year programme?	27	61.4	16	36.4	1	2.3	6.751 $p<0.05$**
5. Does the curriculum meet the defined objectives?	38	86.3	4	9.1	2	4.5	0.777 $p<0.05$*
6. Does the curriculum reflect the characteristics of a 3-year rural TCM programme?	35	79.5	9	20.4	0	0	1.012 $p<0.05$*

* no significant difference
** the responses are significantly different

Discussion and Conclusions

The study identifies the perceptions of a sample of faculty members about the 3-year rural TCM programme. The results indicate that most of the respondents were positive about developing a 3-year old TCM programme and why they favoured developing the programme. They thought that developing the 3-year rural TCM programme suited the needs of China and would be one of the major approaches towards solving the serious shortage of health manpower in rural areas. They believed that the strengths of the programme would outweigh its weaknesses, and that TCM colleges should contribute to the training of doctors for rural areas.

Most of the members thought that the curriculum was feasible. They responded positively to the objectives, courses, time allocation, size of enrollment, selection of clinical settings, and the educational strategies. This strong endorsement will encourage the development of 3-year rural TCM programmes.

Most of the faculty who responded to the questionnaire were senior academics. Among these respondents were not only basic science teachers and physicians, but also administrators and educational research fellows. So it can be said that the opinions possess a certain representation and authoritativeness.

The study also indicated that traditional ideas have a great influence on the new programme. As most members of the faculty were the products of traditional education, faculty development will be necessary. Only when a majority of faculty members accept innovative strategies, can the 3-year rural TCM programme be expected to produce the desired outcome.

The views were solicited from a single college, which is the sole college, at State level among the 31 TCM colleges in the country. Because of the constrain of the sample, the results cannot reflect the views of the whole faculty. The study only discusses the rationale of developing the programme and collected opinions by questionnaire.

It will be necessary to study the ratio of TCM to Western Medicine and the ratio of basic medical science to clinical science, in order to perfect the 3-year rural TCM programme.

Bibliography

Cheng Mingzhang (1991). Speech at the National Conference on Health Work. *Chinese Health Service Management, 2,* 49.

Du Zhongshi (1991). Changing geographic maldistribution of health manpower is an urgent matter. *Medical Education (Beijing), 5,* 23.

Kaufman, A., Hamilton, J.D., & Peabody, J.W. (1988). Medical education in China for the 21st century: The context for change. *Medical Education, 22,* 253-257.

Li Chongchang, & Pan Xubo (1991). A report on sampling investigation of the health personnel in the rural areas of China. *Chinese Higher Medical Education, 5,* 7.

Ma Xu (1987). Establishing rural speciality to train the backbone of rural hospitals. *Medical Education (Beijing), 3,* 3.

Wang Lei, & Jiang Changsheng (1988). Actively and steadily developing higher specialized education. *Medical Education (Beijing), 3,* 2.

Waterman, R., & Akmajian, P. (1990). *Community medical education in China.,* 3-4. Project HOPE.

Xu Wenbo (1988). Opening the road to provide health personnel for the rural areas. *Medical Education (Beijing), 3,* 8-9.

Ying Zhaofeng (1987). Shifting focus to providing service for the rural areas. *Medical Education (Beijing), 3,* 15.

Annals of Community-Oriented Education
1994, Vol. 7, 107-119

The Linköping Medical Programme: A Curriculum for Student-Centered Learning

B. Bergdahl, M. Koch, J. Ludvigsson and J. Wessman
University of Linköping
Linköping, Sweden

Abstract

The novel 5.5 years (11 semesters) medical programme started in 1986 in an established medical school for propaedeutic and clinical training (semester 5-11). The student intake is now 45 per semester. The curriculum is built on problem-based learning and integrates the basic sciences, as well as clinical and community medicine. Special emphasis is placed on multiprofessional education, community medicine, interpersonal skills and critical appraisal. The health care problems are grouped in organ systems, which are repeated in a spiral curriculum. There are three phases: Phase I - semesters 1-3 (normal and specially disturbed functions); Phase II - semesters 4-5 (health and disease); Phase III - semesters 6-11 (clinical medicine, community medicine and human biology).

During Phases I and II, 6-7 students meet twice a week in 1 1/2 - 2 hour tutorials. A maximum of 15 hours contact time per week are scheduled to allow for sufficient time for individual study. During Phase III students have clinical rotations and work individually in a problem-based way. The tutorial groups meet once a week and focus on theoretical aspects of medical problems. The problem-based curriculum has been rewarded by the students' motivation to learn, their personnel development and good results. The graduates have been well received by their senior colleagues.

Introduction

The medical school in Linköping started in 1969 as the sixth medical faculty in Sweden but for clinical studies only. From the beginning there was a commitment to create a complete curriculum in Linköping. The Faculty was influenced by WHO and its work for health promotion and by the educational models of innovative medical schools. Extensive change was initiated in 1975 (Bergdahl et al., 1991) and resulted in the new Faculty of Health Sciences (FHS) with a full medical programme in 1986.

The aims were to emphasize a holistic view of health problems, health promotion and disease prevention, interpersonal skills, multiprofessional teamwork and life long learning. FHS has six study programmes for laboratory technicians, nurses, occupational therapists, physicians, physiotherapists and supervisors for social service and care. Forty nine medical students are admitted in each semester twice yearly; approximately 220 students

---

Requests for reprints should be sent to B. Bergdahl, University of Linköping, University Hospital, Department of Internal Medicine, S-58185 Linköping, Sweden.

start at FHS each semester. Since 1991 the student selection process has changed; half the students are admitted on academic merit as previously and half on merit and written tests and interviews (Areskog, 1992).

Curriculum Structure and Aims

The medical undergraduate programme is problem-based, and the learning centres on selected patient problems and other situations, i.e. in public health and critical appraisal. This results in the integration of the clinical and basic sciences (Fig. 1). There are 11 semesters (5.5 years) divided into three Phases (Fig. 2). Similar problems reappear with a change of focus, depending on the Phase.

The general aims for medical education in Sweden were defined by the former National Board of Universities. These aims form the structure for the competence-related aims of the three Phases (Table I). In addition there are specific objectives for each semester. During the first five semesters these relate to both content areas in a broad way (e.g. understand the inflammatory process) and to competence (e.g. perform an analysis of food intake). A list of objectives does not exceed one page. In Phase III the objectives are listed as presenting problems organised as general problems or related to an organ system (e.g. fatigue; acute chest pain). There is also a list of skills for each semester (e.g. perform an arterial puncture). Thus, content objectives are avoided, in order to allow for new knowledge to emerge in the future.

To limit and focus their studies students will address problems that fullfil at least two of the following criteria: Frequent nationally or internationally; presenting as an emergency; intervention is possible as prevention or cure; serious for the patient or society. Furthermore, there is a natural focus on diseases treated in the clinics where clerkships are based during the respective semester (e.g. circulatory causes of syncope are studied in internal medicine in semester six, and details of epilepsy in neurology in semester eight).

Organisational Structure

The Faculty Board is responsible for the six study programmes. There is a dean of education and a coordinator for each study programme with various advisory and working groups. Student representatives play an active part in these activities. Sector groups have been appointed for curriculum planning; sector, because the medical curriculum is seen as a circle where each organ system is a sector (Fig. 3. Their task is to select health care problems, skills and other tasks within their area as learning objectives and to make suggestions for content and learning resources for the semesters. Each sector group consists of faculty members from both the basic and clinical sciences; representatives from community medicine and the students are in all groups.

Each semester (20 weeks) has a coordinator and a deputy. During Phases I and II the coordinator is a basic scientist or a laboratory physician and the deputy is a clinician. The opposite is true for Phase III. The coordinators are responsible for planning, implementation and examination of their semester. Each coordinator chairs a semester group with 6-8 members from relevant sector groups. The suggestions about changes from the sector groups are taken into account by the programme coordinator and formally agreed by the Faculty Board. Coordinators of semesters and tutors for the problem-based learning groups are recruited by the Education Office. All other educational activities are requested by the semester coordinators from the departments. There is an ongoing evaluation by students of the semesters and the performance of faculty staff.

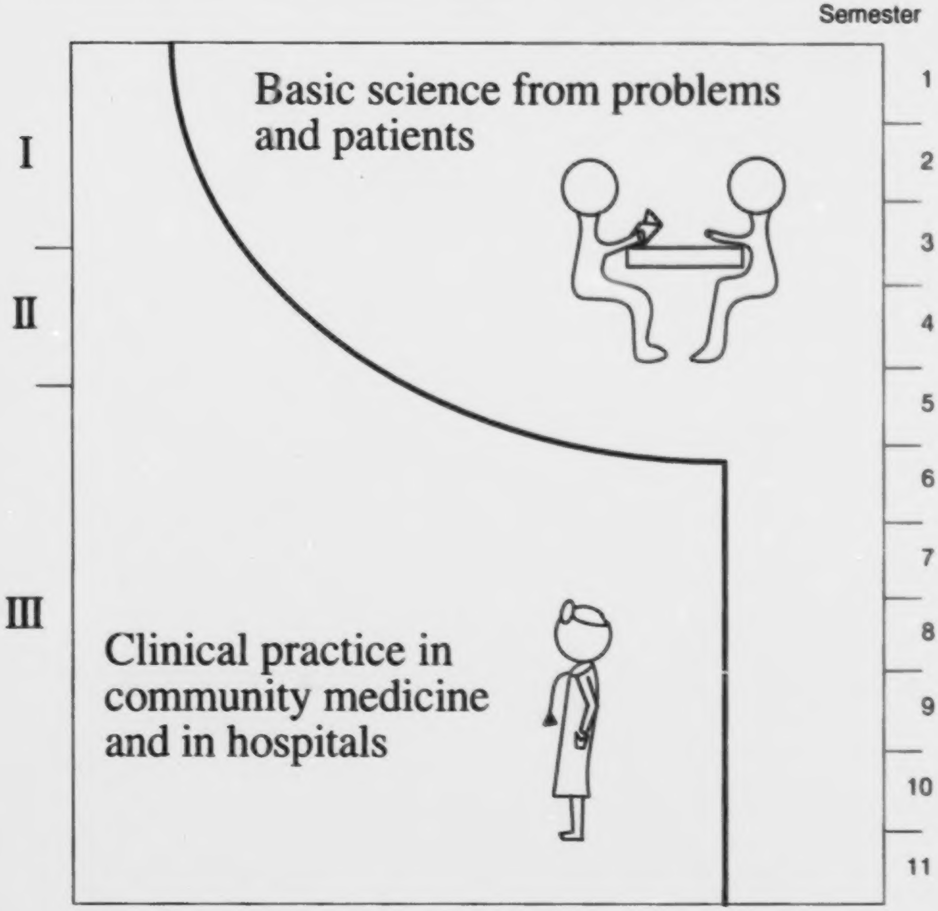

Semester
1
2
3
4
5
6
7
8
9
10
11
I
II
III
Basic science from problems and patients
Clinical practice in community medicine and in hospitals

Figure 1.Principal structure of the undergraduate medical programme

PHASE I

TERM				Ex
1	Man and society; multiprofessional education 10 w*		Skin and Locomotion 10 w	Ex 1 w
2	Nutrition, Digestions, Metabolism, Neural and hormonal regualtion 14 w		Blood and immune system 5 w	Ex 1 w
3	Circulation and respiration 6 w	Renal system, Reproduction and foetal development 9 w	Infection and immune system 3 w	Ex 2 w

PHASE II

TERM					Ex
4	Skin, Locomotion, Nervous system and sence organs 7 w		Endocrine system 3 w	Circulation and respiration 9 w	Ex 1 w
5	Elective 3 w	Nutrition Digestion 5 w	Blood and immune system 5 w	Renal and reproductive systems 5 w	Ex 2 w

PHASE III

TERM						Ex
6	Internal medicine 6 w	Integrated Internal Medicine - Surgery 6 w	Dermatology and infectious diseases 3 w		Family Medicine 3 w	Ex 2 w
7	Surgery 5 w	Integrated Internai Medicine - Surgery 4 w	Orthopaedics 4 w	Anaesthesiology intensive care 2 w	Family Medicine 3 w	Ex 2 w
8	Ophthalmology, Oto-Rhino-Laryngology and Neurology 15 w				Family Medicine 3 w	Ex 2 w
9	Psychiatry 9 w	Geriatrics 3 w	Internal Medicine 3 w		Family Medicine 3 w	Ex 2 w
10	Paediatrics 6 w	Gynaecology and Obstetrics 6 w	Dermatology Infectioous diseases 3 w		Family Medicine and Child Psychiatry 3 w	Ex 2 w
11	Elective 10 w		Community Medicine 7 w		Phase III	Ex 3 w

Rotating clerkships terms 6-10. Ex = Examination
Study in depth in parallel, twice (total 2 weeks) in Phase II and four times (total four weeks) in Phase II; can be extended by use of elective periods.
* w = week

Figure 2. Overview of the undergraduate medical prrogramme

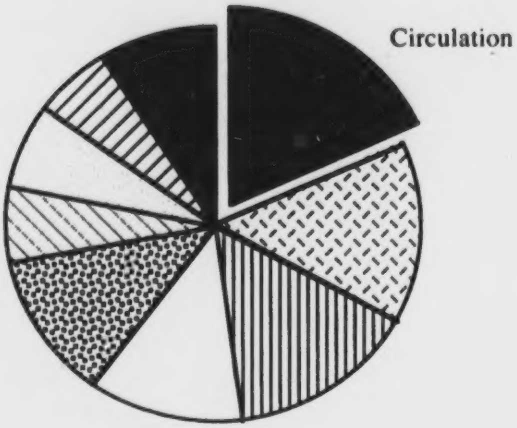


Figure 3. Sector groups for curriculum planning

Problem-Based Learning

Problem-based learning (PBL) in the medical programme is directed by specified aims, the selection of problems, and assessments. However, PBL is organised to give as much responsibility and freedom as possible to the students in their learning. The aim is to emphasize competence for life long learning and to foster personal development.

A heterogeneous composition of students in tutorial groups aims to encourage creative interaction and cooperation between different personalities. The Education Office makes up the groups of six to seven students. A group stays together for a semester (20 weeks), which is long enough to allow conflicts to be resolved and the groups to function well. Each group has two tutors during a semester, one clinician and one basic scientist or laboratory physician, to facilitate the learning process in Phases I and II and to act more as a resource person in Phase III. The use of tutors from the basic and clinical sciences achieves a common responsibility for, and ownership of the whole programme, and the students gain from working with tutors with different perspectives. The tutors alternate one at a time, usually for periods of 2-4 weeks. Scheduling of meetings is arranged by the group and its tutor. During Phase I and II, the tutorial groups meet twice a week for 1 1/2 - 2 hours and during Phase III just once a week. A two day tutor training course is arranged several times a year (Koch, 1993).

The learning problems are given as paper cases. A short authentic case is presented in steps with presenting complaint, findings at physical examination and other investigations, and eventually management and outcomes. Photographs, ECGs and radiographs are frequently added, but the overall complexity is kept low at the beginning of the course. Each case has a guide for the tutor giving the planners' suggestions about content and additional information about the case which a non-expert tutor may need. The group usually studies two cases a week. For each subtheme of two to three weeks there is a list of cases including their presenting problems. As there are more cases than the group can cover, the students and their tutor can select cases to fit the learning of the individual group and decide the sequence of cases. At the end of the subtheme all cases are available for individual study. In the early semesters there is also a session where the various groups discuss what they have learned. This is to reduce anxiety among students and faculty staff.

The groups start their work with a problem without preparation in advance and use a modified Maastricht model for the PBL process (Schmidt, 1983). There are purposely no handouts or references to the literature. This principle is explained at the very beginning; during the first weeks of the course the learning objectives and sources of information are thoroughly discussed in the tutorials. The group can choose to have the tutor or a student as its chairman. Most group meetings are concluded with an evaluation of what has been learning and how the group has learned; the tutor is evaluated as well.

Learning resources are gathered in the FHS library which is well equipped, centrally located and open during evenings and weekends. There is a list of recommended textbooks which is valid for the whole course. Suggestions for this list come from both sector groups and departments, and the policy is to have different books in each subject to allow for individual preferences. The different ways of finding knowledge strengthens the dynamics of the tutorials. The students use computerised search of the literature, and scientific journals are available. A media library of limited size can be used, and computers can be booked. There are also anatomical models and radiographs, but no skills' laboratory, as most of such training is done on each other or with patients.

A Start With Multiprofessional Integration

During the first ten weeks of the first semester students from all study programmes work together in the course Man and Society. The aims are to increase the understanding of the multifactorial causes of health and disease and that the students will share common values. PBL is introduced, and the students work in multiprofessional tutorial groups where their discussion is based on a short description of a situation, frequently a picture without text. Problems and content are from the social and behavioural sciences and deal with the relationship between people of different ages and cultures and with the community. Tutors come from the different education programmes. Other activities include training in search for information and in communication skills, a field study, seminars and lectures. At the end of the ten weeks an individual written examination assesses problem solving and application of knowledge. The test is scored in a qualitative way using preset criteria.

Further Multiprofessional Integration

It is important to follow up the common ground prepared during the first semester. During Phases I and II the students have one or two theme-days in each semester when one semester course from most study programmes takes place. The subjects are in areas of common interest, like emergencies and First Aid, critical appraisal and scientific enquiry, nutrition, prevention and health counselling, teamwork in cardiac rehabilitation, leadership and conflict, or accident prevention. Most themes include small group work or discussions. An ethical forum is held monthly for multiprofessional exchange of ideas and values on a given problem. Both students and health professionals are invited. Integration also takes place spontaneously or is organised when students meet on clinical rotations.

Early Patient Contact

During the first 10 weeks specific time is also timetabled for each study programme. The medical programme arranges patient contacts with the intention that the students will see medical care from the patients' point of view. These experiences form the start of a most important longitudinal training, which has been called "the Strand". It emphasizes interpersonal skills and a holistic view and it continues throughout the whole curriculum (Svedin and Koch, 1990). The tutorial group in the second half of Term 1 will also function as a strand group, which is linked to the same team of a primary care physician and a behavioural tutor during Phase I and II. The groups spend half a day every second week in their health care centre and perform video taped interviews with real patients. The tapes are discussed with the tutors and the students, and there is a different focus each semester. If possible patients are selected to match the actual area of biomedical studies (Foldevi and Trell, 1993).

The Phases

During Phases I and II (Table I) the health care problems are structured by organ systems, which are studied in the first two turns of the spiral curriculum (Figs. 1 and 2). Similar problems are used but with increasing complexity and different focus of learning. For the student this means increasing familiarity and need to use earlier learning, thus consolidation, in addition to finding new knowledge. Within each semester the organ systems are divided into sub-themes. Scheduled time during Phases I and II is limited to about 15 hours per week to provide sufficient individual study time. Tutorials and "the Strand" in interpersonal skills constitute the only obligatory attendance. There are 4 - 6 hours of lectures a week to give an overview or to explain difficult aspects. At the end of each sub-theme there is an hour for discussing students' questions with resource persons. The students are also offered laboratory sessions, dissection, training in physical examination, etc. In addition, resource persons in various subjects can be contacted to meet with individuals or groups to clarify students' questions.

Phase I is devoted to the normal function, mechanisms for maintenance of health and general mechanisms of disturbed function, e.g. malabsorption and inflamation. Physical examination is practised with a focus on normal findings. Phase II deals with diseases, diagnostic methods, and principles for treatment and prevention. Practical training is here concerned with identifying and describing pathological findings.

Table I. Aims of the three Phases

PHASE I **Cell, Man and Society**

- analyse the normal structure and function of the human body and its changes during the life cycle
- explain the mechanism of compensation for principally disturbed function in an organ system and the reaction pattern of the body due to stress from environmental factors
- perform and document a physical examination with emphasis on normal findings
- show understanding for own and other people's reactions at interview and physical examination
- use problem-based learning and critical appraisal of sources of information
- show understanding for the relations between people's living conditions and their health
- identify possibilities for maintenance of health
- describe the organisation of medical services, social services and care and the connections between them
- discuss health problems in various cultures and countries.

PHASE II **Health and Disease**

- explain symptoms and causes of disease related to disturbed structure and function
- analyse the mechanisms of the body for maintenance of health
- perform and document a physical examination with emphasis on deviation from the normal
- communicate with patients and staff and write a patient record
- test a diagnosis by using relevant diagnostic methods and be able to perform simple tests
- describe principles of therapy
- search for and summarise scientific information
- recognise connections between ill health and vital signs and suggest management
- make suggestions for preventive steps against diseases
- analyse the organisation and economics of health care and relate this to other functions of society
- explain health care problems in other cultures and countries
- show understanding for the variation of disease symptoms in relation to language and cultural background.

PHASE III **Clinical Medicine, Community Medicine and Human Biology**

- evaluate symptoms and make decisions about early management
- analyse clinical problems in relation to human biological mechanisms
- analyse and document findings of physical examination
- use a therapeutic approach and a holistic point of view with patients
- evaluate and select diagnostic methods to test a diagnosis
- evaluate various forms of therapy and be able to use therapy for common diseases and in emergency situations
- independently use problem-based learning and apply critical appraisal to scientific information as a basis for an ongoing development of competence
- evaluate relations between ill health and vital signs and take measures independently and in cooperation with other providers of care and public authorities
- carry out preventive steps for individuals and suggest such steps for groups
- suggest measures for the development of care and cooperation with other organisations in society
- evaluate economic consequences of medical decisions in relation to both the individual patient and society
- evaluate health care problems in various cultures and countries.

The educational principles continue during Phase III in the clinical environment. The students have the main responsibility for their learning and can determine the use of their time within the limits set out below. Their studies relate to patients. The number of patients in the care of a student and the complexity of the problems increases within a semester and through the Phase. The clerkships are obligatory, and 20-25 hours per week should be spent with patients. Individual study time is still essential. There is clear integration of basic sciences with the clinical problems; about 20 % of total study time should be used for related aspects of basic sciences.

Institutions throughout the whole county are used for clerkships in hospitals and in primary care. This means that the students become familiar with various levels of health care. There are only one to three students on each ward or in an outpatient department. To insure that the student will be a member of a team , the rotations usually extend over three to four weeks. In primary care the semester objectives influence the selection of patients, and there are also tasks in community medicine to be undertaken. A student will normally return to the same health centre during two or three consecutive semesters to follow up patients.

At the start of a clinical rotation emphasis is placed on informing the students about various activities. It is also suggested that a contract between student and preceptor be formulated in relation to objectives and tasks. The student's own activities are important, and supervision is to stimulate the student's clinical reasoning rather than to simply answer questions. Feedback is ongoing, and knowledge, skills and personal performance are assessed at the end of a rotation. The same structured proforma is used by the preceptor and by the student for self-assessment. The preceptor discusses the results with the student. The students also evaluate the clerkships.

The weekly tutorial group focuses on theoretical aspects of clinical problems. From Semester 8 the students have no tutor for their group but can call on resource persons to discuss specific matters. This can cause logistical problems and is only used to a limited extent. There are some three lectures per week, usually on Fridays when students on county rotations are also in Linköping. The students have the additional choice of working for two to three hours in a laboratory or a clinic that are not part of the rotations. The training in interpersonal skills continues. Video taped patient interviews are discussed in the strand group twice in each semester with the behavioural science tutor. During Semester 8 there is a three day seminare at a resort to concentrate on communication with patient and staff, based on the students' experiences.

Studies in Depth and Electives

These activities are important tools to develop life long learning skills, including critical appraisal, and to meet individual preferences and needs during a long curriculum. There are two studies in depth which are undertaken mainly in parallel with the students' ongoing studies: one in Phase II and one in Phase III for two and four weeks, respectively. Electives occupy three weeks in Semester 5, and 10 weeks in Semester 11. The latter period can be divided and taken after Semester 5.

The students formulate the objectives of their electives which can be used for any studies, clerkships, and international exchange that are of value in their medical studies. It is possible to use studies in depth as electives. There are two coordinators for the above activities, and many faculty members take part as supervisors and assessor for the scientific projects. The students' research projects are usually presented in the respective departments, and in Phase III always as part of the Phase examination.

Examinations

The examinations aim to test understanding and application of knowledge, as well as personal performance in realistic situations, rather than recall of details. The types of test support subject integration, and no subject is judged separately. This also means that no subject is ever studied completely before the end of the course. The grades are only pass and fail as in all Swedish medical schools. An examination is set at the end of each Semester and each Phase; there are no formative assessments during the Semesters. To take part in examinations the students must have attended obligatory activities productively and have shown suitability for their future profession in their contact with patients. This competence is assessed in "the Strand"(Bergdahl et al., 1990) and after each clinical rotation. The end of semester examinations normally consist of a skills test, written and oral assessments. The skills test is an Objective Structured Clinical Examination (OSCE) of limited size. The written examination starts from case histories similar to those studied in the tutorial groups. Some clinical semesters use Modified Essay Questions (MEQ). The questions are also similar to those asked by students and tutors (explain the mechanisms of ...; identify which questions you will ask in this situation ...; etc.). The oral test is conducted in groups of three to four students. There is usually a team of two examiners, one clinician and one basic scientist. This format has been chosen to emphasize and train the students in oral discussion. Clinical cases are frequently used as a starting point. Each student is assessed for about 20 minutes. The oral examination is also an occasion which provides feedback for the teachers. The oral test attracts fewer marks than the written assessment.

The Phase examinations should give a holistic view of the student. The intentions are to stress the main principles of the curriculum and to guide the student's learning (Bergdahl et al., 1990). At the end of Phases I and II respectively the assessment begins at a primary health centre where the student is given a patient to take a history and perform a physical examination during half an hour. This performance is video-taped by another student. The tape is then reviewed by a primary care physician and a basic scientist. Interpersonal and physical examination skills are assessed, and the student is questioned to test understanding of signs and symptoms according to the Phase objectives. The student then defines a limited problem related to the patient and goes back to the FHS library for a detailed information search. The examiners and the student meet again after three to four hours for a report of the outcomes and an analysis of the search process. The format is similar to the

McMaster triple jump. The librarians have begun to take part in the assessment of the students' information search strategies.

The Phase III examination at the end of the curriculum has four components: a video-taped patient interview and physical examination followed by assessment of the findings and underlying mechanisms by a clinician. This is followed by an assessment of the videotape recording by a Strand tutor. Next comes a four hour written test in the format of MEQ dealing with broad clinical problems and related basic sciences, a written structured analysis of a scientific publication, and an oral or poster presentation of an individual study in depth. Since 1993 the MEQ test has been replaced by a more extensive oral assessment of the study in depth. The MEQ was found to be too similar to the semester tests during Phase III. It was considered more important to emphasize general skills, such as critical appraisal and life long learning. Furthermore, a national and subject-integrated MEQ has recently been introduced following the two years of internship. The video taped interview has been moved to Semester 10 to provide time for additional training, if these skills were assessed as not satisfactory.

General Discussion

The medical curriculum is organised with considerable responsibility and freedom for the students. In our view the Faculty has gone further than many other schools based on PBL. Most students adapt well to this way of learning after an initial period of chaos. They work hard but are happy in their studies and do not want to change to traditional education. The structure with three Phases and possibilities to repeat appear to reduce the anxiety among both students and teachers. The Strand is greatly appreciated.

The majority of the students pass the examinations; the failure rate is about 10-15%. The definitive drop-out rate is about 15 %, which is within the same range as in other Swedish medical schools. Most of these are early and reflect uncertainty about career choice, social and/or language problems. Some students have left because of PBL, but others have come for the same reason from traditional schools in Sweden and abroad. These students, with two or three years of medical studies elsewhere can usually start in Phase II or Phase III respectively. They normally adapt very well to the problem-based curriculum.

It has also been rewarding that since the start of its medical course FHS has gone from a low position to the top concerning first applicants for medicine in Sweden.
Four classes of students have graduated. It has been rewarding to follow their development and ability to learn. The graduates have been well received by employers. These young doctors seem to be efficient and relate well to patients and staff. The impression is that their factual knowledge is at least as good as that of graduates from traditional schools, which is in agreement with comparisons between programmes in other countries (Schmidt et al., 1987).

The teachers´ perspective has changed over the years from that of teachers teaching to teachers helping in learning. A variety of staff development activities are essential for the implementation and running of the new curriculum. Their experience as tutors and perceptors has made the Faculty confident in PBL. A positive factor is that students, basic scientists and clinicians get to know each other personally.

PBL has shifted the power in education from departments to a central group of coordinators and the administration. In the early years this caused anxiety among academics about the place and status of their subject in the new curriculum. In the process of change it has been helpful that many teachers have had to function as generalists and leaders outside their areas of expertise and thus gained a broad overview of the whole programme.

At present PBL functions consistently, but there are areas that need improvement. The strands in multi-professional integration, critical appraisal, and public health have been harder to implement than expected. The quality of clinical guidance by perceptors is uneven. The amount of scheduled time must be watched; taken together, too many good activities can ruin PBL.

The curriculum should never be looked upon as perfect. The challenge is to keep the enthusiasm and creativity for education among faculty staff and to reinforce a structure that assures consistency with the basic principles of the Faculty. The students´ input is essential in these tasks. Furthermore, staff and students are stimulated by the attention of many visitors who are interested in the curriculum and by the function of FHS as a WHO Collaborating Centre.

References

Areskog, N.H. (1992). A field experiment on admission to medical education at Linköping University. *Annals of Community Oriented Education, 5,* 287-299. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Bergdahl, B., Koch, M., Svedin, C.G., & Wasteson, Å. (1990) Early phase examination based on clinical performance and problem-based reasoning. In: W. Bender, R. Hiemstra, A. Scherpbier, & R. Zwierstra (Eds.). *Teaching and assessing clinical competence*. Groningen, The Netherlands: Boekwerk Publications.

Bergdahl, B., Ludvigsson, J., Koch, M., & Wessman, J. (1991). Medical undergraduate education Sweden: A case study. Faculty of Health Sciences at Linköping University. *Teaching and Learning in Medicine, 3, (4),* 203-209.

Foldevi, M., & Trell, E. (1993). Learning the basics of medicine in general practice in the Faculty of Health Sciences, Linköping University, Linköping Sweden. *Annals of Community-Oriented Education, 6,* 97-113. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Koch, M. (1993). Teacher training: Training tutors in a problem-based learning curriculum. *Annals of Community-Oriented Education, 6,* 311-319. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health

Sciences.

Schmidt, H.G. (1983) Problem-based learning: Rationale and description. *Medical Education, 7,* 1-16.

Schmidt, H.G., Dauphinee, W.D., & Patel, V.l. (1987) Comparing the effects of problem-based and conventional curricula in an international sample. *Journal of Medical Education, 62,* 305-315.

Svedin, C.G., & Koch, M. (1990) Early clinical contact, holistic view and interpersonal skills. In: W. Bender, R. Hiemstra, A. Scherpbier, & R. Zwierstra (Eds.). *Teaching and assessing clinical competence.* Groningen, The Netherlands: Boekwerk Publications.

Annals of Community-Oriented Education
1994, Vol. 7, 121-129

General Practice, Medical Education and Community-Based Teaching: The Maastricht Experience

H. F.J.M. Crebolder and J. F.M. Metsemakers
University of Limburg
Maastricht, The Netherlands

Abstract

The contribution of the Department of General Practice (family medicine) to the Maastricht medical curriculum is described. Special attention is paid to practical medical education, aspects of community orientation, and the network of affiliated and academic practices. Information is provided on the recruitment and reimbursement of general practitioners as trainers, and the ways and means to monitor the progress and achievement of the students.

General Practice and Medical Education

In the Netherlands the general practitioner (GP) has a central position within the health care system, especially in primary care (Tiddens et al., 1991). Everybody in the population is on the list of a GP. All health problems are, in principle, presented first to the GP. In that way the GP functions as the gate keeper to secondary health care (Knottnerus et al., 1989). Due to its general character and its gate keeping function, the natural discipline to fulfil this task within the medical school, is the Department of General Practice.

There are sufficient reasons for general practice to play a leading role in medical education. The aims of the medical curriculum are to provide medical students with a basic understanding of illness, health and disease and related factors ; with the knowledge, skills and attitudes to apply basic methods to diagnose, to treat and to study scientifically illness and disease; and with a general understanding of the current and potential developments in medicine (van Weel and Crebolder, 1993). After leaving the medical school the graduates undertake additional specialist training to prepare them for their future specific position in the health care system. The general undergraduate aims can only be achieved through contributions from medical disciplines with a generic role in patient care. This factor has promoted the role of general practice in the medical curriculum: next to its educational expertise, its responsibility for "every" disease and "every" person in the community implied a relevant contribution to the achievement of such generic aims in medical education.

Translated into concrete goals, generic practice can teach basic clinical skills, such as history taking and physical examination; basic practical skills such as venepuncture, measuring blood pressure, using the stethoscope; communication skills; the interrelationship of somatic and psychosocial conditions; and the family context of the patient.

Requests for reprints should be sent to H. Crebolder, University of Limburg, Faculty of Medicine, Department of General Practice, P.O. Box 616, 6200 MD Maastricht, The Netherlands.

The Maastricht Medical Curriculum

The Faculty of Medicine offers a six year problem-based curriculum. The profile is characterised by multidisciplinary education, tutorial groups, self-directed learning, training in skills and attitude, assessment of knowledge through a progress test, early contact with health care, and primary health care orientation (Schmidt et al., 1991; Metsemakers et al., 1991). A large proportion (17 per cent) of the curriculum consists of electives.

The premise is that education and research should reflect the views, health needs and morbidity of the community (GPEP Report, 1984). Applied to Dutch society this means adequate attention to health problems of the elderly and geriatric patients. Home care and the implementation of technology in primary care should also be mentioned.

Roles and Functions in the Curriculum

A variety of teaching roles and functions is the consequence of problem-based learning as an educational system. The complexity of the matrix-organisation of the Faculty requires careful coordination and central management. There are fifty roles and functions which rotate amongst the members of staff. For each role or function an allowance is calculated, expressed in hours or FTE (full time equivalent). One FTE is 1800 hours per year. The most important roles and functions are: membership of the Faculty Board or of a committee, coordinator or tutor of a tutorial block, duties in the skills laboratory, practical medical training of students in the undergraduate or postgraduate curriculum (clerkships) and assessment. The total number of FTE available to the Faculty is 82.6.

The Contribution of the Department of General Practice

The contribution of the Department is 9.2 FTEs: 6.2 FTEs for tasks in the on campus curriculum and 3.0 FTEs for the network of affiliated and academic practices (see below). This amount is quite substantial (11.1 per cent of the total). By comparison the Department of Internal Medicine contributes 4.5 FTEs and the Department of Surgery has 3.6 FTEs. Table I gives an overview of the roles and functions of the department.

General practice is involved in many tutorial blocks. The involvement in Years 3 and 4, which are disease-orientated, is almost 100 per cent (11 of the 12).

About 10 per cent of the electives are supervised by staff of the Department of General Practice.

The contacts with simulated patients in the skills laboratory are mainly based on case-histories derived from general practice. Another basic skill, which is practised from Year 1 onwards, concerns doctor-patient interaction (Fraser, 1991; van Dalen et al., 1989). The Department provides 15 per cent of the trainers and assessors.

The content of the theoretical part of the curriculum has been analyzed with reference to educational and medical characteristics (Metsemakers et al., 1991). The data have been compared with primary health care data obtained form the Registration Network of Family Practices, a computerised health information system in the southern part of the Netherlands

(Metsemakers et al., 1992). The analysis revealed differences between curriculum and health care data in several aspects, such as reasons for encounter/complaints, problems/ diagnoses, chronic diseases, health problems of children and referrals to specialists (Fig. 1). Since then a major revision of the curriculum has taken place (Snellen-Balendong, 1990). The primary care orientation has not been substantially altered.

Table I. Contribution of the Department of General Practice to the curriculum

Roles and functions		**Budget in FTE**
Membership of boards and committees		0.5
Tutor and coordinator of blocks		1.5
Supervision of electives		0.7
Supervision in the skills laboratory		0.9
Practical medical training - Year 1		0.4
Coordination, planning and supervision	- Years 2,3,4	0.7
	- Years 5/6	3.2
Contribution to assessments		1.3
Total		9.2

With regard to practical medical education in primary care, the three months obligatory clerkship in the fifth or sixth year is most important (Martens and Op 't Root, 1992). In comparison with the other medical schools in the Netherlands, it is the longest such clerkship. This will remain so, even after the recent revision which will shorten the clerkship to 10 weeks and place it at the end of the curriculum. There it will have an integrative function when all the previously obtained knowledge, skills and attitudes can be practised.

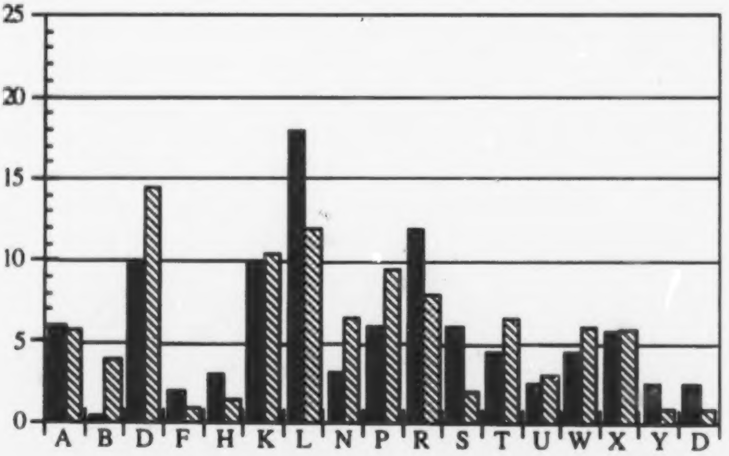
The main goals for the students are:

1 to become familiar with the characteristic morbidity and complaint patterns and the way in which complaints and problems present;
2. to gain experience in recognizing the interrelations between somatic, psychological and social factors and the influence of interactions between family-members on illness and illness-behaviour; and
3. to acquire skills in the general practice approach to complaints and problems.

The educational system can be characterised by six features:

1. a ratio of one GP teacher to one student;

2. autonomous examination by the student of at least 15 patients a week;
3. daily follow-up discussions on the basis of patient records prepared by the student;
4. opportunities for individual study;
5. one tutorial-day a week at the Medical Faculty; and
6. intensive contacts between Faculty and GP-teachers.



Distribution of problems / diagnoses over ICPC chapters*

■ Reasons for Encounter Study (Health Care data)

▧ General practitioner patient cases (Curriculum data)

ICPC chapters: A. General and unspecified. B. Blood, blood-forming organs, lymphatics, spleen; D: Digestive; F: Eye; H: Ear; K: Circulatory; L: Musculoskeletal; N: Neurological; P: Psychological; R: Respiratory; S: Skin; T: Endocrine, metabolic and nutritional; U: Urology; W: Pregnancy, childbearing, family planning; X: Female genital system (including breast); Y: Male genital system; Z: Social problems.

Figure 1. Content of primary care problems/diagnoses in tutorial blocks

Key activities include at least three autonomous contacts with patients per day, written problem-oriented records, and daily follow-up discussions with the GP-teacher. The students must also follow-up a family and write a related essay. Furthermore, in "transmural education", the student accompanies a patient to the hospital after a referral or an admission (Crebolder and Op 't Root, 1994). Additional activities include observations of and by a GP teacher, contacts with other professionals in primary and clinical care, involvement in home care, attending team meetings and taking part in night and weekend shifts. During the weekly tutorial days the student is a member of a group of at most 11 students, when the group meets with a faculty GP-tutor at the Medical Faculty. The department has developed two other programmes, in order to create a continuum of practical medical education.

In Orientation Primary care (1993). the First Year student spends two days with a general practitioner, and one day each with a community nurse, a social worker, and a home help. The purpose is to observe their functions and tasks and to gain an impression of the problems presented to them. Evaluation has shown that this programme is highly appreciated and very motivating for the students.

In the Adoption Programme (Metsemakers et al., 1992) the student is adopted by a general practitioner during Years 2 to 4. The intention is that the student spends one day during each tutorial block in the practice of his adopting GP. The programme starts at the end of Year 2 and runs through Year 3, and almost to the end of Year 4. A total of eight days are spent in the practice during this part of the course.

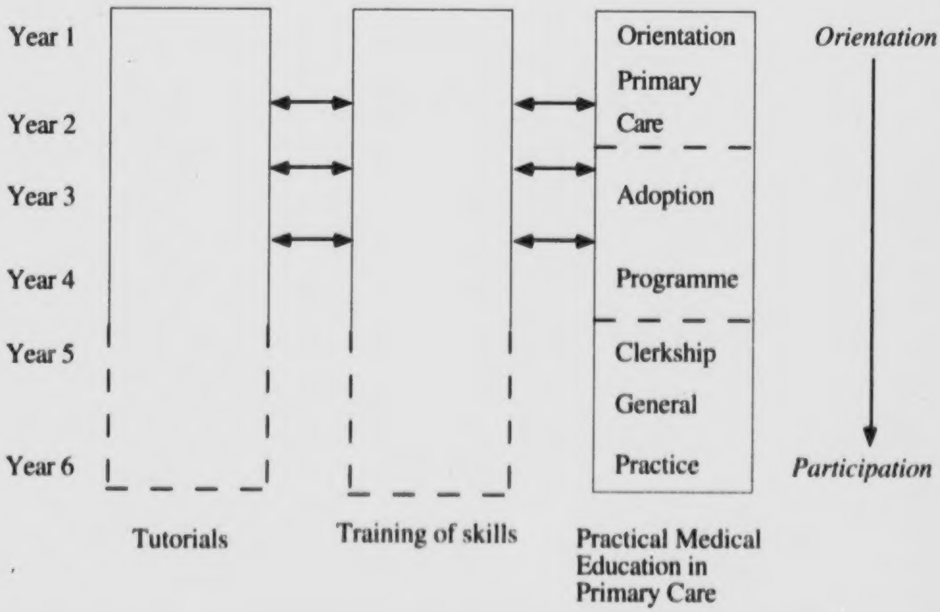
The main purpose is continuing integration of knowledge, skills and attitude acquired in the other parts of the curriculum, i.e. the tutorial blocks and the Skills laboratory training. Specific topics can be introduced, such as family dynamics, premedical phase of ill health, the concept of chronicity, and community orientation.

The activities of a day in the practice are:

- observation: the student observes a few doctor-patient contacts;
- own activity: the student takes the history and carries out the physical examination of a patient selected by the general practitioner to "fit" with the tutorial block and the skills laboratory training;
- visit to a family : the student visits a family with a health problem, related to the tutorial block, in order to study the consequences of the disease for the family; during the programme the student follows one "healthy" family, with special attention to family dynamics;
- community orientation : a subject, related to the tutorial block, is investigated in the practice, for instance the percentage of elderly, prevalence of a particular disease, prescription rates of specific drugs; and
- at the end of the day a one hour follow-up-discussion is scheduled.

The community orientation part of the programme is practicable because a growing number of practices is part of the Registration Network Family Practices (Metsemakers et al., 1992). Computerised epidemiological data are available for each practice and for all the patients within the Network, a total of 60.000 patients. There is no denominator problem. The exact number of patients registered with a practice is known, and the Registration Network is primarily intended for research purposes.

Figure 2 illustrates the continuum of the students' involvement in primary care in relation to the tutorial blocks and skills training. A gradually increasing participation in health care is encouraged.



Year 1
Year 2
Year 3
Year 4
Year 5
Year 6
Orientation
Primary
Care
Adoption
Programme
Clerkship
General
Practice
Orientation
Participation
Tutorials
Training of skills
Practical Medical
Education in
Primary Care

Figure 2. The relationship of tutorial blocks, skills training and practical medical education in primary health care

A Network of Affiliated and Academic Practices

In order to carry out the programmes of practical medical education, an extensive network of affiliated and academic practices has been built up (Crebolder and Kocken, 1989). This has resulted in more than 60 per cent of the 400 GP's in the region being connected with the Department. Affiliation means that a practice is willing to receive one or more students on an annual basis in exchange for a fixed fee. A special relationship has been established with 25 "academic" practices. A detailed plan of action is agreed with each of them.This is revised annually. While some take part in research as well as in practical medical training and in the Registration Network, others perform only one or two of these tasks. The group consists of health centres, duo and solo practices. Three FTEs are available for teaching in these practices. Payment is here effected either by reimbursement of time spent on teaching according to University salary scales or by a junior member of the Department assisting in the practice. This process of academic growth and development in primary care is facilitated by the Government.

Recruitment and Reimbursement of General Practitioners

Almost all GPs in the region are approached at least once to participate in one of the teaching programmes. The crucial criteriom for selection is the genuine interest of the GP. Research has shown that financial reimbursement plays a minor role in the decision of a

GP whether or not to participate (Kocken et al., 1992).
Quality of practice site, staffing and equipment are important factors in selection. For instance, for the clerkship a separate examination room is required for the student.

For Orientation in primary care no money is paid to the GP. For the adoption-programme the rate is fl.1000 per annum; this implies the supervision of 4 - 6 students in each year. For the clerkship the allowance is fl.2600 for each student. Essential for the quality is the regular, formal and informal contact between the staff of the department and each individual GP. Training sessions are organised, written material and evaluation reports are provided, and personal feed back is given during visits to the practice.

Progress and Achievement of the Students

At faculty level four clinical competences are assessed separately: knowledge, skills, problem-solving, and attitudes (van der Vleuten and Verwijnen, 1990). The Department of General Practice contributes its share to each of these.
Two instruments are used to assess knowledge: block tests and progress tests. At the end of each block period all students take a test of 150 to 250 items in the true/false format. The test has a formative application. The progress test contains 25 - 300 questions in true/false format, together forming a sample of knowledge from the entire medical cognitive domain. It represents the end objectives of the curriculum. The **same** test is given four times a year to **all** students. Each test is made up of new items.
The skills test is modelled on the Objective Structured Clinical Examination (OSCE) (Harden and Gleeson, 1979). The test is administered to all classes once a year and consists of between six and twelve stations.
Although problem-solving is a core concept in problem-based learning, no valid and reliable instruments are at present available. Standardised clinical ratings in the clinical rotations are used as formal assessment of problem-solving and attitudes. Informal assessment of attitudes takes place during simulated patient contacts in the Skills Laboratory and in special group meetings.
The following are used for the evaluation and assessment of the practical medical training programmes in general practice: satisfaction of the students and trainers; an essay, as it gives information about the integration of the above four competences. A computerised test is being developed to assess aspects of the clinical competence gained during the clerkship.

Discussion

It may be concluded that the Department of General Practice contributes substantially to the curriculum, directly and indirectly. This corresponds with the original philosophy of the medical school. A coherent set of programmes of practical medical education implements relevant aspects of community-based teaching. It will require continuing effort and commitment on the part of the Faculty and the Department to maintain the present involvement. The outcome should be that the future doctor will be equally aware of, and trained in the health problems of primary as well as secondary care. The basic training prepares for each level of care, not only for general practice / family medicine. Fewer than 30 per cent of the graduates can enter GP training, as the number of training positions is limited.

References

Crebolder, H.F.J.M., & Op 't Root, J.M.H. (1994). Een transmuraal onderwijsprogramma vanuit de huisartspraktijk. *Nederlands Tijdschrift voor Geneeskunde;* accepted.

Crebolder, H.F.J.M., & Kocken, R.J.J. (1989). Academisering van huisartspraktijken. *The Practitioner [dutch edition],15,* 1130-1132.

van Dalen, J., Zuidweg, J., & Collet, J. (1989). The curriculum communication skills teaching at Maastricht Medical School. *Medical Education, 23,* 55-61.

Fraser, R.C. (1991). Undergraduate medical education: Present state and future needs. *British Medical Journal, 303,* 41-43.

Harden, R.M., & Gleeson, F.A. (1979). *ASME medical education booklet No 8.* Assessment of clinical competence using an objective structured clinical examination (OSCE), Medical Education. Dundee, United Kingdom: ASME, University of Dundee.

Knottnerus, J.A., Knipschild P.G., & Sturmans F. (1989) Symptoms and selective bias ; The influence of selection towards specialist care on the relationship between symptoms and diagnoses. *Theoretical Medicine 10,* 67-81.

Kocken, R.J.J., Meijer, J.S., Ooms, F.E.M., & Smeets-Rinkens, P.E.L.M. (1992). Academisering van de huisartsgeneeskunde; Onderzoek naar de ontwikkeling van huisartsgeneeskundige academiseringsnetwerken in Nederland; Wat is het doel, de definitie en de kwantitatieve en kwalitatieve omschrijving van zo'n netwerk? *Medisch Contact (47), 26,* 811-4.

Martens, F.M.J.G., & Op 't Root, J.M.H. (1992). Practical medical education in general practice. *Medical Education, 26,* 213-7.

Metsemakers, J.F.M., Bouhuijs, P.A.J., & Snellen-Balendong, H.A.M. (1991). Do we teach what we preach? Comparing the content of a problem-based medical curriculum with primary health care data. *Family Practice, 8,* 195-201.

Metsemakers, J.F.M., Höppener, O., Knottnerus, J.A., Kocken, R.J.J., & Limonard, C.B.G. (1992). Computerised health information in the Netherlands: A registration network of family practices. *British Journal of General Practice, 42,* 102-6.

Orientation Primary Care. (1993). Report. Maastricht, The Netherlands: Faculty of Medicine. University of Limburg.

Physicians for the Twenty-First Century. (1984). The GPEP Report. Report of the panel on the general professional education of the physician and college preparation for medicine. Washington, DC: Association of American Medical Colleges.

Schmidt, H.G., Neufeld, V.R., Nooman, Z.M., & Ogunbode, T. (1991). Network of Community-Oriented Educational Institutions for the Health Sciences. *Academic Medicine, 66,* 259-63.

Snellen-Balendong, H.A.M. (1990). The renewal of the curriculum. In: C. van der Vleuten, & W. Wijnen (Eds.). *Problem-based learning: Perspectives from the Maastricht experience.* Amsterdam, The Netherlands: Thesis publishers.

Tiddens, H.A., Helsters, J., & van de Zande, J. (1991). Health services in the Netherlands. In: W.W. Holland, R. Detels, & G. Knox. (Eds.). *National health systems of the world.* Oxford, United Kingdom: Oxford University Press.

van der Vleuten, C., & Verwijnen, M. A. (1990). System for student assessment. In: C. van der Vleuten, & W. Wijnen. *Problem-based learning: Perspectives from the Maastricht experience.* Amsterdam, The Netherlands: Thesis-publishers.

van Weel, C., & Crebolder, H.F.J.M. (1993). General practice and medical education: The Dutch experience. Journal *of General Practice, 43,* 490-491.

Annals of Community-Oriented Education
1994, Vol. 7, 131-138

Community-Based Team Training Programme at Jimma Institute of Health Sciences

Ch. Jira
Jimma Institute of Health Sciences
Jimma, Ethiopia

Abstract

The paper discusses the Community-Based Team Training Programme of Jimma Institute of Health Sciences. It is the second strategy of community-oriented education employed by the Institute with a programme of relevance to community health needs. In their final year five different categories of students are organised into health teams to work for ten weeks in four Training Health Centres (THCs) with the responsibility to operate and manage with minimum supervision the district health service of their respective health centre. The programme has gained steady support from departments and schools of the Institute, staff of THCs, the communities, and from local and national government. The experience is also assessed positively by the students, with increasing motivation towards the programme. It is an Institute-based programme which involves all schools and departments.

Introduction

The Jimma Institute of Health Sciences (JIHS), established in 1983, is the first innovative community-oriented institution of higher education in the field of health in Ethiopia. It implements an innovative curriculum based upon an educational philosophy of community-oriented education.

One major strategy is the Community-Based Training Programme to facilitate and enhance the students' community training experience.

The Health Team Training Programme (TTP) is the second strategy within Community-Oriented Education employed by the Institute. The programme was started in 1990. In their final year students from different categories are organised into health teams to work for ten weeks in primary health care at Training Health Centres (THCs).

The community-based team approach is an important strategy in the education of health personnel for achieving the aims of primary health care: "Primary Health Care ... relies, at local and referral levels, on health workers suitably trained socially and technically to work as a health team and to respond to the expressed health needs of the community." (WHO and UNICEF, 1978).

Objectives of the Team Training Programme

1. To be able to work as a member of the team in addressing Community Health Problems

---

Requests for reprints should be sent to C. Jira, Jimma Institute of Health Sciences, P.O. Box 745, Jimma, Ethiopia.

by applying the knowledge and skills of one's profession and integrating these with the knowledge and skills of other members of the team.

2. To be conversant with community involvement and multisectoral approaches in running district health services.

Procedures for Preparing the Team Training Programme Posting

- Orientation seminar
    - Prior to the commencement of the programme an orientation seminar is organised for the students and supervisors to address the concept, objectives, major activities of the programme, roles and responsibilities of the team and individual students, roles and responsibilities of resident and senior supervisors, and related administrative issues.
- Other procedures
    - Working out requirements for carrying out the programme.
    - Checking the THCs for maintenance of accommodation.
    - Preparation for guidance of students in the preparation of an action plan, implementation and evaluation of programme activities.
    - Assigning students to THCs to form heterogenous teams.
    - Setting the starting date in the Institute's academic calender and working out supervision schedules for senior supervisors.
    - Alerting THC staff about the start of the programme and related preparations.

Organisation and Management of the Programme

To achieve the objectives, medical students, student nurses, as well as student pharmacy technicians, laboratory technicians, and sanitarians spend ten weeks during their final training period in a team with responsibilities for operating and managing the district health service at a Training Health Centre (THC) under the guidance and supervision of resident staff (Jimma Institute, 1988). In 1993, a total of 148 students participated. 40 were medical students, and the remaining 108 were Diploma students (Table I).

The four selected THCs (Agaro, Asendabo, Jimma and Shebe) are located within a 50 km radius of the Institute. These THCs are model health units, organised like other health centres which render services. They were additionally equipped with dormitory facilities, kitchen, multi-purpose auditorium which serve as dining and meeting room, and library. Each of three THCs accommodated up to 25 students per rotation. The fourth Training Health Centre (Asendabo) presently accommodates only 12 students, but a new building is under construction to upgrade the facilities. The students are provided with free accommodation and food during the period of attachment. Two support staff are employed at each THC to handle cooking and cleaning activities for the students.

The THCs have sufficient number of permanent staff of the different categories of health workers to provide continuity of service to the public and to give training support to the students (Table II). Each dependent health unit (Health Station) is staffed by two or three Health Assistants.

Table I. Distribution of students by profession to Training Health Centres and Team Training Programme rotations (1st, 2nd), 1993

S.H.	Profession/ Category	THC								Total
		Shebe		Jimma		Agaro		Asendabo		
		1st	2nd	1st	2nd	1st	2nd	1st	2nd	
1	Medical (degree)	5	6	5	5	5	6	4	4	40
2	Nurse (Diploma)	6	5	6	6	5	5	4	4	41
3	Pharmacy Technicians (")	4	3	3	3	3	3	1	1	21
4	Environmental Health (")	4	3	4	4	3	4	2	2	26
5	Laboratory Technicians (")	3	4	3	3	3	2	1	1	20
Total		22	21	21	21	19	20	12	12	148

Table II. Human resources for health at the four Training Health Centres, 1993

THCs	Awraja (District)	Human Resources for Health						
		Physicians	Nurses	Pharmacy Technicians	Sanitarians	Laboratory Technicians	Health Assistants	Administrative staff
Asendabo	NadaDedo	2	5	1	1	2	8	11
Agaro	Limu	2	7	2	1	2	10	15
Jimma	Manakersa	2	12	2	1	2	14	23
Shebe	Sekachokorsa	4	10	2	1	2	14	20

The THCs serve the population of an entire Awraja (District). The area of each Awraja, its population, as well as the average number of outpatients and inpatients, including deliveries per week for each THC and dependent health units for the year 1993 are presented in Table III.

To implement the programme a tentative organisational structure has been established. Each THC has a head, a senior doctor, who is responsible to the coordinator of the Team Training Programme at the Institute who, in turn, is responsible to the Community-Based Education Coordinator. Each Training Health Centre has a link with the Zonal Health Department whose manager is also the Coordinator of Community-Based Education. The students from the different categories are grouped into two teams with their own team leader and an overall group leader. The latter is directly responsible to the head of the Training Health Centre for correlation (Fig. 1) (Jimma Institute, 1988).

Table III. Statistics for the four Training Health Centres for 1993

THCs	Awraja (District)	Total area in sq. km.	Total population	Outpatient attendance for each THC /week (Average)	Inpatients including deliveries for each THC/week (Average)	Dependent Health units (HS)		
						Total	Outpatient attendance /week for each HS (Average)	Inpatients including deliveries for each HS per/week (Average)
Asendabo	NadaDedo	3045.5	388,749	241	4	6	60	1
Agaro	Limu	2266.7	297,686	385	9	16	62	1
Jimma	ManaKersa	1400.0	354,600	523	4	6	64	1
Shebe	Sekachokorsa	4296.95	224,468	1236	20	6	63	1

Table IV. Distribution of supervisory team members for the Team Training Programme, 1993

Profession	Supervisors		
	Senior	Resident	Total
Public Health Expert	4	-	4
Clinician	4	-	4
General Practitioner	-	4	4
Nurse	4	4	8
Pharmacist	4	4	8
Laboratory Technologist	4	4	8
Sanitarian	4	4	8
Total	24	20	44

Supervision is at two levels:

a) THC *level.* Among the resident staff one professional from each category is assigned to supervise respective students during the period of attachment (day-to-day supervision);

b) *Institute level.* Fortnightly visits are arranged for two consecutive days by a senior supervisory team from the Institute composed of a Public Health Expert, a Clinician, a Public Health Nurse, a Sanitarian, a Pharmacist and a Laboratory Technologist (Table IV).

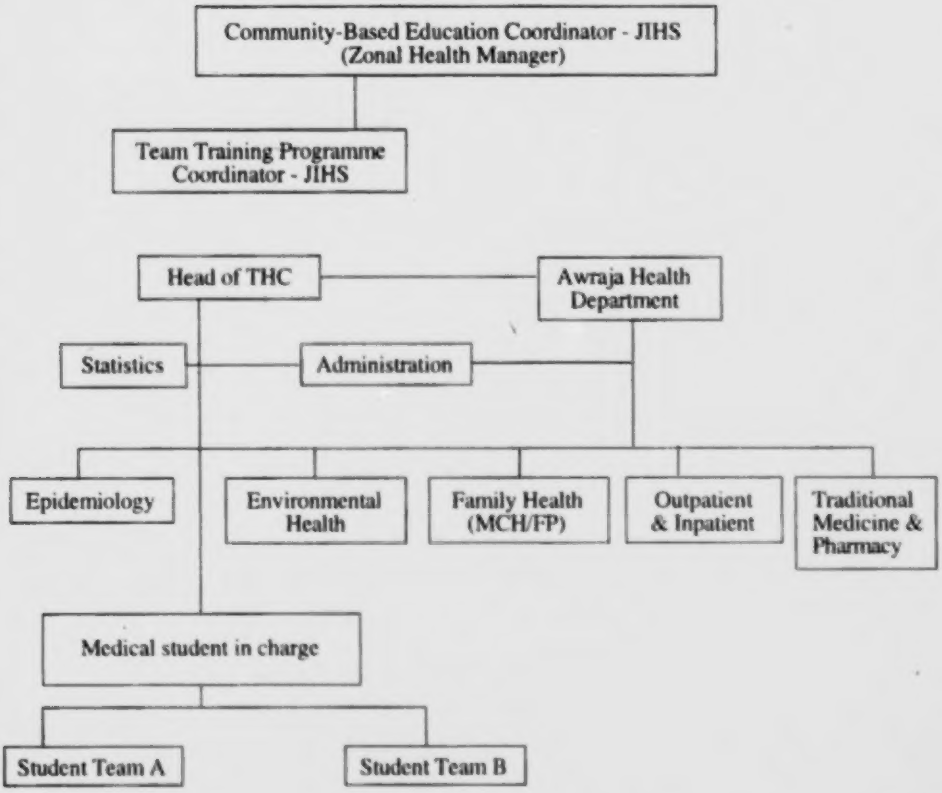

Community-Based Education Coordinator - JIHS
(Zonal Health Manager)
Team Training Programme Coordinator - JIHS
Head of THC
Awraja Health Department
Statistics
Administration
Epidemiology
Environmental Health
Family Health (MCH/FP)
Outpatient & Inpatient
Traditional Medicine & Pharmacy
Medical student in charge
Student Team A
Student Team B

Figure 1. Organisational chart for a Training Health Centre

The educational commitments of resident staff and of the senior supervisors relate to close supervision of the students' activities. Supervision by each resident staff member represents a total of 40 hours per week within normal working hours. The senior supervisors' fortnightly visits during the ten week attachment period involves some ten hours per week for each professional. The coordinator of the programme, besides teaching assignment, devotes all his time to the management of the programme, approximately 40 hours per week.

One long base Toyota Land Cruiser is permanently available for the day-to-day activities of each THC. At the beginning and end of each posting the students are transported to and from their respective THC by the Institute's buses. The senior supervisors from the Institute use long base Toyota Land Cruisers every fortnight.

Activities of the Team Training Programme

The programme activities are related to the essential components of primary health care addressing promotive, preventive, curative and rehabilitative services based on the Ministry of Health Plan.

During the first two weeks at the THC each team of students is required to study the health centre environment and catchment population and prepare an action plan for their ten week stay at THC within the framework of the Awraja plan of action. The students then discuss the feasibility of their plan of action with the THC supervisory team and present it to the senior supervisory team for feedback and approval. The targets of the approved action plan form the basis for monitoring progress towards the achievement of the required outcome. The implementation of the action plan is monitored through daily and weekly meetings of the team in the presence of resident supervisors. The senior supervisor from the Institute will also joint the team for fortnightly assessment. The students are expected to justify failures (shortcomings) and success in accomplishing their activities, during the presentation of the ten week report in the presence of resident and senior supervisors and the next group of students. This helps the outgoing group to evaluate its achievement and to introduce the new group to the THC environment and activities.

Assessment

The assessment of students is concerned with:

- Level of competences and skill in their respective profession
- Attitudes
- Relationship with team members, Health Centre staff and the community
- Punctuality
- Participation at meetings
- Seminar presentations, activities in the action plan and the ten week reports.

The students' performance in the above aspects is assessed every week by THC supervisors. Progressive assessment during the ten weeks will contribute to the final grade which is confirmed in discussion between the senior and resident supervisors.

In order to enhance the students' problem-solving skills, final year medical students carry out an independent research project. The study is to be problem-oriented, community-based, scientifically and ethically acceptable, feasible and action-orientated (Anon., 1990). This is one of the requirements for graduation. The students also participate in ongoing research during their attachment in team training.

Discussion

The innovative team training programme at the Jimma Institute of Health Sciences has to grapple with a dual task. The programme must enable the students to maintain the standard of competence required in their respective field. At the same time the programme must be able to respond to the health needs of the community to which the students have been assigned. This type of training requires not only teaching staff and facilitites, but also collaboration with government, non-governmental and other organisations, as well as active involvement of the community. Generally there is good understanding and support from the political system and large organisations. The students are encouraged to approach different sectors and the community during the process of preparation of the Health Action Plan and its implementation. The results so far have been favourable.

Many faculty members, who had shown reservations about the programme at the beginning, eventually expressed support. This was primarily due to their own experience in the field when they visited student teams in THC (Anon., 1990). The views of resident and senior supervisors in 1993 were entirely positive (Table V). Students, who feared an adverse affect on their future career, appreciated the programme and were convinced that it would be of paramount importance in their subsequent career (Table VI).

Table V. Response of resident and senior supervisors on the importance of the Team Training Programme in reinforcing the students' earlier training, 1993

Questions	Supervisors			
	Resident		Senior	
	No	%	No	%
. Not related at all	0	0	0	0
. It is of limited help	0	0	0	0
. Quite useful	11	61.1	15	71.4
. It is of utmost importance	7	38.9	6	28.6
Total	18	100.0	21	100.0

The total cost of the programme is difficult to calculate, as additional buildings are still under construction, and we are planning to carry out an evaluation of the entire programme.

Conclusion

The rationale for the team approach lies in the diversity of functions to be performed by different professionals in order to achieve one and the same goal, that is an efficient and economical system of health delivery for the people.

It is expected that the students will, through active service within a community, increase their awareness of the importance of community involvement and intersectoral collaboration in health care and health development.

The three cohorts of different professionals who have gone through the system have successfully passed their final examination and received the Ministry of Health licence to practise their profession in different parts of the country.

The Community-Based Team Training Programme of JIHS is Institute-based and involves all schools and departments in the process of its implementation. The Institute and the health services are also linked as the result of the integration of teaching and service.

Table VI. Students' response on the importance of the Team Training Programme in reinforcing what they have learned in school, 1993

Questions	No of students	%
. Not related at all	3	2.09
. It is of limited help	21	14.68
. Quite useful	76	53.14
. It is of utmost importance	43	30.09
	143	100.0

References

Anon. (1990). *Bulletin of Jimma Institute of Health Sciences (JIHS).* Vol. 1(2), 36.

Jimma Institute of Health Sciences (1988). *Team training manual.* Jimma, Ethiopia: Jimma Institute of Health Sciences.

WHO and UNICEF (1978). *PHC report of the international conference "Health for All".* Series No. 1. Geneva, Switzerland: World Health Organization.

Annals of Community-Oriented Education
1994, Vol. 7, 139-144

Attitudinal Changes following Slum Posting

P. Zachariah, A. Zachariah, M.V. Natu, K. Chaudhry and T. Singh
Christian Medical College
Ludhiana, India

Abstract

A standardised pre-tested Likert-type scale was administered to 40 medical students to assess their attitudes towards medical care in the slums. For the next six months the students were exposed to slums and taught case management under field conditions. The questionnaire was again administered at the end of this period. A significant positive change in the attitudes was noted (2.1 + 1.4 v/s 3.9 + 0.8; p 0.05). It is suggested that more time should be allocated for slum visits, so that students develop a positive attitude to this aspect of medical practice.

Introduction

It is becoming increasingly clear that it is not possible to study medicine within the four walls of a hospital. It is necessary to go where people live, so that interaction of agent-host-environment can be properly understood.

Until now, the emphasis for community-oriented teaching was related to rural areas. With the realisation that urban slums probably need as much attention, the focus of teaching and training is shifting (Harpham et al., 1988). The Christian Medical College, Ludhiana (CMCL) initiated a feasibility study on child survival in urban slums. We observed that students were reluctant to spend time in slum areas. We hypothesised that by exposing the students to urban slums, it would be possible to change their attitudes. The present study is an attempt to test this hypothesis.

Materials and Methods

A total of 40 students (of a class of 50) participated in this study. The attitudes of these students were tested by using a standardised Likert-type scale containing 15 items (Appendix I). The students were then exposed to medical and social problems of slums (Appendix II).

At the end of six months, the questionnaire was administered again, and the difference in responses was analysed. Anonymity was maintained on both occasions.

Attitude Scale

The attitude scale used in the present study was designed and standardised by the authors (Verma and Singh, 1993). It contained 15 affirmative statements. Eleven were negative

---

Requests for reprints should be sent to T. Singh, Christian Medical College, Department of Paediatrics, Ludhiana, 141008 India.

and four were positive. The respondents were required to indicate their agreement or otherwise on a 5 point scale (strongly agree, agree, can't say, disagree and strongly disagree). The positive statements were scored as 5,4,3,2 and 1 while the negative statements were scored as 1,2,3,4 and 5. A score of 3 indicated a neutral attitude while scores more or less than that indicated a positive and negative attitude respectively.

To test reliability, the responses of the first ten students were analysed. These students were later excluded from the final analysis. Internal consistency of the scale was tested by calculating Pearson-product moment co-efficient of correlation and applying the Spearman Brown Prophecy Formula. The level of significance was calculated from standard statistical tables (Best, 1992).

The scale had a reliability of 0.71 with a significance of .0.01 at 8df.

Observations

The difference in scores between Test I and Test II is statistically significant (Table I). Table II shows the mean scores for selected items with greatest change between the two tests. Each of the differences was statistically significant.

Table I. Showing the mean attitude scores

	No. of respondents	**Mean Attitude Score (Max. 5.0)**
Test I	40	2.1 ± 1.4
Test II	40	3.9 ± 0.8

Difference between mean scores was statistically significant p 0.05

Discussion

The present study aimed to identify the effect of exposure to slums on the attitudes of medical students. Test I, administered at the beginning of the study, demonstrated a mean score of 2.1, indicating that medical students had an overall negative attitude towards medical care in the slums. The mean score in Test II, administered at the end of the study, rose to 3.9, signifying a positive shift in attitudes. The difference between the score in Test I and the score in Test II was statistically significant ($p>0.05$). This supported the hypothesis that exposure to slums helped in improving medical students' attitudes.

A positive change was noted in all the items. However, change was more marked for certain items. These include "exposure to poverty and malnutrition may demoralise young students", "visits to slums can be meaningful even without resources for drugs"; "there is no point in going to the slums, unless the sanitation and water supply is improved"; "slums provide experience in situations which one is later going to face"; "every student should be exposed to slums"; and "time spent in slums is a waste". It can be seen from Table II that there was a marked shift, from an extremely negative to a significantly positive attitude.

Table II. Attitude scores on selected items

Item No.	Score on Test I (Mean ± SD)	Score on Test II (Mean ± SD)	Significance
3	2.4 ± 0.6	4.2 ± 0.4	0.05
4	1.2 ± 0.3	4.3 ± 0.3	0.01
5	0.8 ± 0.3	3.9 ± 0.9	0.01
9	1.3 ± 0.5	4.3 ± 0.1	0.01
10	1.4 ± 0.9	4.2 ± 0.4	0.01
12	0.9 ± 0.2	3.8 ± 0.7	0.01

Attitudes have a very strong influence on behaviour. They provide the link between theory and practice. Medical educators should be concerned not only to provide knowledge but also to develop positive attitudes in their students.

While everyone would agree that medical students should be trained in the environment in which they will work in later life, many medical schools continue to concentrate on hospital-based teaching. Their students find themselves at a loss when they enter everyday practice. To use a lighter analogy, such students are trained how to swim and are then sent to the desert to apply their newly acquired skills (Morley, 1977).

The regulations of the Medical Council of India stipulate that students should be taught under actual field conditions by teachers from the clinical disciplines. However, in actual practice this responsibility is left solely to the Department of Social and Preventive Medicine. To the best of the authors' knowledge, very few attempts have been made in the over 150 Indian Medical Colleges to incorporate slums in their outreach programmes.

In this context, the results of the present study assume some importance. By exposing students to actual working conditions in the slums, a positive change in attitude was brought about. This method of attitudinal change is well accepted by psychologists (Morgan, 1988). Another potential result of such an intervention could be a change in attitudes even in those who didn't have such an exposure (Kagen et al., 1980).

Conclusion

Medical students should be trained under actual field conditions. Not only will this help in giving them an actual practical experience, but it will also promote a positive attitudinal change towards poverty, ignorance and deprivation. Such change would, however, depend on what the students actually do under field conditions. If they can be convinced that it is possible to help the community by using its own resources, the extra effort involved in providing such experiences will be more than repaid.

References

Best, J.W. (1992). *Research in education.* New Delhi, India: Prentice Hall.

Harpham, T. et al. (1988). *In the shadow of the city-community health and urban poor.* New Delhi, India: Oxford University Press.

Kagen, J. et al. (1980). Psychology: An introduction. New York, NY: Harcourt Brace.

Morgan, C.L. (1988). *A brief introduction to psychology.* New Delhi, India: Tata McGraw Hill Co.

Morley, D. (1977). *Paediatric priorities in the developing world.* London, United Kingdom: Butterworths and ELBS.

Verma, M., & Singh, T. (1993). Designing attitude scales: Developing and standardising an attitude scale. *Indian Paediatrics, 30,* 1303-1307.

APPENDIX I

Statements Used for Attitude Assessment

1. It is the responsibility of Government agencies, rather than voluntary/private organisations, to provide health care in the periphery.
2. Providing health care at the doorstep in slums will make people too dependent on health workers.
3. Exposure to poverty and malnutrition may demoralize young students, persuading them to seek greener pastures.
4. Visits to slums can be meaningful even without resources for drugs and investigations.
5. There is no point in going to the slums, unless the Government does something about sanitation and water supply.
6. It is embarrassing to go to peoples' homes as the health team becomes an unwelcome guest'.
7. Conditions in slums are too extreme and not likely to be encountered in later practice by most students.
8. Placing emphasis on the human aspects of medicine does not necessarily compromise the technical side of medical practice.
9. Taking medical students to the slums for training will expose them to situations which they are going to face in later life.
10. Even those students who aim to pursue postgraduate specialisatio should participate in a community care programme.
11. Field visits are enjoyable because they are like a picnic for the students.
12. Time spent in slums can be better spent in the college library.
13. Better professional knowledge is gained in hospital clinics than in the slums.
14. Free advice given at the home has little value for the slum dweller.
15. Slum visits decrease the respect and value of the health team in the eyes of the people.

APPENDIX II

The Slum Project

The project was designed to enable the students to see social problems in an actual setting and the influence they can have on health status. Another important objective was to facilitate the team spirit amongst future physicians and other health personnel.

Medical students were assigned to this project during their third year of study.
Phase I: Data Collection. Each team included a medical student, a student nurse, a pharmacy student and a medical laboratory technology student. These teams worked with eight facilitator teams consisting of one medical and one nurse teacher. Each team was required to visit 10 huts/homes once a week for three hours.
The teams collected baseline data which were entered into a family-folder, which has a list of family members, information on educational status, family planning status and immunisation status. The thick folder acts as a jacket to hold separate pink cards for every under five child in that family, a yellow card for the mother (if pregnant) and a white card for each eligible couple (i.e. wife between 15 years and menopause). Such family folders have been in use in the Department of Community Health since 1972.
Phase II: Health teams, which were constituted previously, visited the slums once a week for 3 hours. During these visits, they weighed all children under five (once a month), administered immunisation under supervision and enquired about health problems of the family members.

Annals of Community-Oriented Education
1994, Vol. 7, 145-151

Undergraduate Training in Epidemiology and Research Methods at the University of Ibadan

M.C. Asuzu
University College Hospital
Ibadan, Nigeria

Abstract

The study of defined communities to establish their health status, the main health problems and their determinants, as well as to evaluate the results of health interventions was considered essential for undergraduate training in community-based medical education (CBME) in the Ibadan Medical School at the attainment of national independence in 1960. In 1962 the existing epidemiology and research field exercise was more or less a descriptive sociological study called "the village study". The village could be any of the many specific communities in the Ibarapa District served by the Ibarapa Programme. Over the years, this exercise has become absorbed into a one or several day "community diagnosis" exercise. This is undertaken during the one week practical rotation in health education in the Ibarapa 8-week medical clerkship or posting in community medicine. A full scale epidemiological research exercise throughout the posting was developed to replace the earlier "village study".

This paper discusses the history, development and process of this newer exercise.

Introduction

When the Colonial University of London College in Ibadan was to become the autonomous University of Ibadan, the medical school developed its own entirely different and community-based MBBS (Ibadan) training programme to fit the health needs of the country. The new programme started with the 1962 intake of students (Brown, 1961; Gilles, 1965; Ogunlesi, 1965). These founding fathers believed that a study of the communities and their health problems was an essential part of undergraduate education. Such studies would help the students to discover at least the major environmental and community (socio-cultural) factors which caused or contributed to the patients' illness. Many of these factors would also determine maintenance of health after discharge from hospital.

At the beginning, these community studies were carried out by subgroups of each set of students in the community-based posting. Each group would choose a single community, usually one rural village, during the eight weeks of the posting. This activity was called "the village study" (Saad, 1967; University of Ibadan, 1967). Most of these studies were largely sociological and descriptive only; but they were reckoned to fulfill the desired needs and

Requests for reprints should be sent to M.C. Asuzu, University College Hospital, Department of Preventive and Social Medicine, Ibadan, Nigeria.

expectations, both of the teachers as well as the students. This perception was especially so with students who came from the privileged urban segments of society. Students who came from tribal cultures, different from those of the Yorubas who inhabit this part of the country, also benefitted especially from these studies.

Over the years, however, the major part of this village study has been absorbed into the single afternoon "community diagnosis" exercise within the one week health education training activity of the Ibarapa posting (Oyediran et al., 1987). Some aspects of community/public health diagnosis are also covered in the environmental health training activities, such as house, food premises and market inspections, as well as the food and meat hygiene exercises. These inspections are carried out as required by law and often in company with the health officers of the health authority. Apart from these community and public health diagnosis and intervention exercises, the Ibarapa Programme CBME developed in the 1970s a programme of full scale epidemiological research spanning the range of epidemiological methodology as far as possible. This programme aims to help the students not only in attitudinal and practice orientation as would-be community health/medical professionals, but also in practical epidemiology for life-long professional application, whether they eventually practise in community health or not (Tables I - III).

The importance of better training of health workers in epidemiology (including medical students and doctors) has been stressed (Nakajima, 1991; Hakimi, 1992). This also emphasized the role of university/medical school collaboration with other agencies, institutions and communities in medical education and services (Federal Ministry of Health, 1992). The present training programme has tried to fulfill these aims for the past twenty years.

The Eight Week Epidemiological Research Programme

The Ibadan Medical School CMBE had been described in detail in an earlier report in this journal (Asuzu, 1993). The essential outline is shown in Table I.

Prior to the Ibarapa posting, the students have been exposed four times to epidemiology, biostatistics and research methods, and, indeed, to all the subdisciplinary areas of public health and community medicine (Table I). Limited field practice is involved in these four periods. It is during the Ibarapa posting that virtually all the activities are of a practical nature. The theoretical teaching in the posting is reduced to tutorials and seminars for which the students do a great deal of prior study, and the talking as well. The epidemiological component of the Ibarapa posting provides the students with the opportunity to put all the previous theoretical and limited practical training into practice. The process and time schedule of the study programme are shown in Table II.

A revision/overview tutorial of epidemiological research methods and practice is conducted on the first day of the posting. The students receive a written outline in a detailed posting manual for the development of their study (Table III). Within the three day introductory period each of the six subgroups will select a topic for their epidemiological study. Each subgroup presents its proposal and defends it at the project seminar on the evening of the third day of the posting. Based on the criticisms and advice received from the academic staff, each subgroup refines the study and produces a final proposal during the next week. The next five weeks are used in completing the study. The last ten days of the eight weeks are devoted to the "end of posting activities". Throughout this eight week period the students receive constant supervision and assistance from the academic staff in executing the study, especially at the Wednesday review seminars.

At the end of the posting, five bound copies of each student's report is produced by the students for the various libraries of the Ibarapa and Ibadan campuses of the Medical School. These studies have helped in the replanning and implementation of the services, as well as in providing baseline data for follow-up studies by future students on this posting. Abstracts of all studies since the mid-1970s have recently been published by the Department for wider circulation (Oyediran and Brieger, 1987).

Table I. The 5-year Ibadan medical teaching programme in preventive and social (community) medicine

Year	Course	Time frame
Year 1	Introduction to medical statistics	2nd semester
Year 2	(1) Man and his environment (medical ecology/sociology)	1st semester
	(2) Introduction to clinical and community medicine	2nd semester (8 weeks)
Year 3 (1st clinical year)	Block posting in preventive and social medicine (including compulsory endemic diseases and clinic attendances). Ful' theoretical STD course in public health and community medicine.	(6 weeks)
Year 4	Ibarapa community and primary health care practice posting in group rotations.	(8 weeks)
Year 5	Revision course.	(2 weeks)

Table II. Time schedule and directives for the epidemiological study during the Ibarapa posting

1. 1st three days	Development of a two page (maximum) protocol of proposed study; its presentation and defence on the third evening at Igboora.
2. 1st rotational activity week	Further development and refinement of the study, and write-up of final two page (maximum) protocol of the study. Separate pages of dummy tables and primary data collection sheet or questionnaire.
3. 2nd rotational activity week	Standardisation and/or validation (including pilot testing) of study instruments as needed.
4. 3rd-5th rotational activity weeks	Execution of the study.
5. 6th rotational activity week	Analysis, draft write-up and seminar presentation of the study.
6. Last 10 days of posting	Final write-up of the study for book production as part of end of posting activities.

Recent Studies

In general, students are invited to decide the topic of their group's study and, as much as possible, in different subspecialty areas of community health. As the bound copies of previous studies are available for them to consult in the library, they can avoid community exhaustion by rejecting topics that have been used in the recent past with the same community. They may, however, repeat a study in another community for comparison. The students must justify the study of their choice in the light of the many other diseases and health problems to which these resources could have been applied more effectively.

Alternatively, the coordinator suggests or assigns study topics to some or most of the subgroups. Such studies may be either subjects for which we wished to produce an overview or aspects which constitute major health problems in the district, or a topic of national or international interest. Some subgroups have also been involved as field research workers in aspects of a major research project of the medical school.

Table III. Outline of the two page (maximum) protocol of epidemiological research to be developed by each subgroup of students at the Ibarapa posting

1. Title of study (not more than 20 words).
2. Participants in the study (the students of the subgroup).
3. Justification of the study (including problem statement).
4. Broad objective (1 sentence).
5. Specific objectives (3-4).
6. Study materials and methods (including epidemiological type of the study, study instruments and their methods of development, study population, size and time of study).
7. Methods of analysis (including titles of dummy Tables and Figures, statistical tests planned, etc.).
8. Any plans for the study beyond book production for the MBBS degree; e.g. journal publication, conference presentation, etc.
9. Any assistance that may be needed from the institution.*

* Students are expected to bear the cost of their studies but secretarial assistance in producing study instruments, and simple laboratory facilities are usually provided.

Thus, in the last two academic years some of the topics to which between 3 to all 6 subgroups of a posting have been assigned included:

- Nutritional status in the Ibarapa community; involving nutrition in pregnant women, birthweight patterns, nutrition in the under-fives, in school age children, and in the adult population.
- Backache in different occupational and industrial groups, as well as the Ibarapa community at large.
- Food hygiene in Ibarapa, both for household food as recently proposed by the United Nations Childrens Fund (UNICEF, 1991), as well as other food hygiene practices in different segments of the Ibarapa community - market raw food sellers, cooked food vendors, and restaurant services.

- Nature and aetiology of blindness in the Ibarapa community involving different towns and villages in the district (with a view to the institution of a mobile cataract surgical extraction programme).

The students have from time to time pubished the results of their studies in the Ibadan Medical School's Student Research Journal (Dokita) which is of a fairly good professional standard. Some have also published in conjunction with academic staff in professional, peer-reviewed journals. The present plan is to encourage annually publication of at least two articles in each of these types of journals.

Conclusion

The education of doctors in the scientific basis and methods of medicine as a science (e.g. epidemiology), as well as in the professional art (i.e. clinical medicine) is progressively being recognised. Most of such training elsewhere has concentrated mainly on the postgraduate level. This mandatory Ibadan Medical School programme has tried, since its beginning in 1962, to do this at the undergraduate level as a fundamental study for all doctors. So far, the different aspects of the programme that had been scrutinised have been positively rated by the student and staff participants (Saad, 1967; Bomba, 1987; Asuzu, 1989). A further paper in this Volume of the Annals reports on the entire programme up to the Ibarapa posting from the students perspective.

A cursery look at the list of students registered with the National Postgraduate Medical College in the specialisation programme for community medicine and general (primary) medical practice suggests a disproportionately higher number of Ibadan graduates; a possible influence of this programme. A study is being planned to evaluate the veracity of that observation between the graduates of Nigerian medical schools with or without such community-based or community-oriented programmes.

Acknowledgements

The author would like to thank all past and present students and staff participants in the Ibarapa Programme who have contributed to making it what it is today. I thank Mr. C.O. Jolade for secretarial assistance.

References

Asuzu, M.C. (1989). The influence of undergraduate clinical training on the attitude of medical students to rural practice in Nigeria. African Journal of Medical Science, 18, 245-250.

Asuzu, M.C. (1993). Community-based medical education: A review of the oldest programme at Ibadan, Nigeria. *Annals of Community-Oriented Education, 6,* 69-81. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Bomba, W.G. (1987). *Effect of a rural community health posting on medical students knowledge of the health education aspects of primary health care.* MPH Dissertation.

University of Ibadan, Nigeria: Department of Preventive and Social Medicine.

Brown, A. (1961). Medical eduation in Nigeria. *Journal of Medical Education, 36,* 1036-1041.

Federal Ministry of Health (1992). *Programme of the national workshop on the Medical School-Local Government partnership in medical education.* Ijebu-Ode, Nigeria.

Gilles, H.M. (1965). Teaching of preventive medicine in the tropics. *The Lancet, 2,* 280.

Hakimi, M. (1992). A report on the working conference of university partnership project. *INCLEN Newsletter, 12(2),* 22.

Nakajima, H. (1991). Epidemiology and the future of world health: The (12th IEA Conference) Robert Cruickshank Lecture. *International Journal of Epidemiology, 20(3),* 589-594.

Ogunlesi, T.O. (1965). The Ibarapa project: A new look at Ibadan. *Journal of the Nigerian Medical Association, 2,* 168-172.

Oyediran, A.B.O.O., & Brieger, W.R. (1987). *Twenty-five years of the Ibarapa community health programme.* Ibadan, Nigeria, Ibadan: African Press Ltd.

Saad, I. (1967). The Ibarapa posting: Facts and fictions. In: University of Ibadan, Ibarapa Project Bulletin, 3, 6-8. Students at Igboora. Ibadan, Nigeria: Ibadan University Press.

United Nations Children Fund (1991). *For the children: UNICEF-Nigeria community programme of cooperation 1991-1995.* United Nations Children Fund, 13-15.

University of Ibadan (1967). Explanation of the programme of teaching in October-November 1967. In: University of Ibadan, Ibarapa Project Bulletin, 3, 16-17. *Students at Igboora.* Ibadan, Nigeria: Ibadan University Press.

Annals of Community-Oriented Education
1994, Vol. 7, 153-166

An Integrated Ethics Programme in a Community-Oriented Medical School

K. R. Mitchell, C. Myser and I. H. Kerridge
University of Newcastle
Newcastle, Australia

Abstract

The teaching and assessment of bioethics has always been an integral part of undergraduate medical education at the University of Newcastle, Australia. Since the first intake of students in 1978 there have been two major additions to the ethics programme, each a response to the changing needs of the profession itself. The first change involved the introduction of clinical ethics into the clinical rotations of senior students. The second addition, "Clinical Ethics as a Professional Skill" is a seminar programme specifically designed to focus on the skills associated with clinical ethical reasoning and decision-making in practice and to help students apply their knowledge about ethical theory in actual clinical practice. This paper describes the bioethics programme at Newcastle, the recent development of clinical ethics, and its proposed assessment using an instrument we have called the Clinical Ethics Written Case Report.

Ethics and the Challenge to Community-Oriented Medical Schools

Medical schools, such as McMaster, Maastricht, Suez Canal, Bayero and Newcastle (Australia), have led the way in adopting innovative community-oriented curricula, which often use small-group, problem-based learning and emphasize the acquisition of skills (such as communication skills and independent learning) to equip their graduates for future clinical practice in a *wider* sense. The challenge for community-oriented medical schools is to resist *"regression to the educational mean"* (Maddison, 1980) and to continue being responsive to the need for change (McMaster, 1990). One of the more immediate challenges to community-oriented, problem-based curricula is the emerging importance of bioethics. Changing perspectives on informed consent and the doctor-patient relationship, the emergence of a language of patient "rights", and the increasing centrality of patient and community perspectives regarding the access to, and delivery of health care have created a situation where the discipline of bioethics demands incorporation in an organised fashion into medical curricula.

As health care professionals, health economists, epidemiologists and public health professionals are forced to face the ethical consequences of resource allocation, it is difficult to perceive of any instance where exposure to medical ethics at the undergraduate level would be inappropriate. This paper describes the efforts made by the University of

Requests for reprints should be sent to K.R. Mitchell, University of Newscastle, Faculty of Medicine, NSW, 2308 Australia.

Newcastle, Australia, to provide a fully integrated undergraduate programme of bioethics education which recognises the importance of an ethical component to clinical competence.

Bioethics and Medical Schools

The history of courses in bioethics as a separate and compulsory part of undergraduate medical education is brief, spanning little more than a decade. In America, Veatch and Sollitto (1976) noted that formal teaching in bioethics was rare and when it did occur, it emerged as a part of other courses such as "The doctor-patient relationship." Such courses, largely elective in the mid 1970's, became part of compulsory courses in the late 1970's and still later, developed into separate and compulsory courses in the early 1980's (Pellegrino and McElhinney, 1982). In 1983 only nine American medical schools had compulsory and separate courses in bioethics; by 1989, 43 of the 127 schools had separate and compulsory courses, while 100 covered bioethics within required courses (Miles et al., 1989).

Outside North America the growth in formal courses in bioethics has been slow, and, apart from a few medical schools scattered around the world (e.g. Nottingham, Southampton, Kings College London, McMaster, Maastricht and Newcastle Australia) it was not until the early 1980's that medical schools seriously questioned the assumption that ethically justifiable decisions can be made on the basis of scientific training alone. From this point on, change has been rapid. By 1985, Wolstenholme claimed an "explosion" had occurred in the formal teaching of bioethics in North America and Western Europe. However, it was not until 1986 and later that Canada, Australia, The Netherlands, West Germany, France, Italy, Yugoslavia, Denmark, Sweden and Japan responded in earnest to publications concerning the objectives and content of ethics courses (e.g. Williams, 1986; Boyd, 1987; Ten Have and Kimsa, 1987; Hasekura et al., 1990).

The Emergence of "Clinical Ethics"

Clinical ethics can be regarded as a subset of Bioethics and provides a specific and more limited focus on clinical ethical practice and patient care. Beginning in the late 1970's clinical ethics emerged as a distinct entity requiring its own educational focus and teaching strategies, particularly for students in the later years of medical education (Siegler et al., 1990; Pellegrino et al., 1990). Clinical ethics has been defined by Jonsen et al. (1986) as, "... the identification, analysis, and resolution of moral problems that arise in the care of a particular patient." It is argued that the central focus of clinical ethics should be patient-doctor decision-making, an activity that takes place at the bedside, "where ethical discussion must end in decision and action" (Pellegrino, 1988). In focusing on the doctor-patient interaction and the process of decision-making, the field of clinical ethics does *not* address, however, many of the important but broader ethical issues in medicine, such as access to care and its delivery, issues of health care policy, resource allocation, conflicts of interest and biomedical research.

Ethics and the Undergraduate Medical Curriculum

In the undergraduate curriculum, the broad ethical issues addressed by bioethics should be *vertically* integrated. In the early years, the curriculum should emphasize a broad knowledge base of major ethical theories, principles and concepts, as well as providing opportunities for ethical reflection, reasoning and argumentation. The later years of student training should continue this growth in bioethics knowledge and methodology. In addition, clinical ethics would also be introduced and *horizontally* integrated in the later years of student training, to enable students to apply their knowledge of ethics to *actual* clinical cases *across* the major clinical specialties.

The impetus to move the educational focus of learning from the classroom to the bedside in the later years of medical education has enlivened the debate regarding the relationship between ethical theory and clinical practice (Hoffmaster et al., 1989). Despite controversy regarding the "application" of ethics and ethical principles, in medicine, most educators would accept that clinical-ethical reasoning and analysis are essential components of all medical practice.

Ethics and Basic Curricular Goals

The University of Newcastle ethics programme has evolved over the past 16 years into two sub-programmes. In the five year programme "Health Law and Ethics" (HLE) the students explore in the *bioethics* sub-programme ethical principles and concepts directly related to the recognition and understanding of the ethical issues raised by the clinical problems in their problem-based learning. *Clinical Ethics*, the second sub-programme, is specific to clinical decision-making and was developed for Years Four and Five (our senior students), to ensure that students were able to apply their knowledge of ethical principles and concepts to the patients in their clinical rotations. Table I sets out the teaching objectives for sub-programmes. Student objectives, what students should be able to do by the end of the clinical ethics sub-programme, are set out in Table III.

The Newcastle Programme

The Newcastle, Australia undergraduate medical curriculum is problem-based, community-oriented and organised in five domains or areas of study: 1) professional skills; 2) critical reasoning; 3) diagnosis, management and prevention of illness; 4) population medicine; and 5) self-directed learning (Engel and Clarke, 1979). The teaching and assessment of both bioethics and clinical ethics takes place within the clinical problem-solving activities and learning of Domain 3 (Engel, 1982) and has evolved over 16 years into three basic components.

Bioethics Theory is a formal programme which began in 1979 and now comprises 21 x 1 1/2 hour seminars and associated small-group discussions. Ethical issues which arise from the clinical problems (Domain 3) are selectively discussed in terms of the basic ethical principles, rules and concepts essential to all ethical reasoning and clinical decision-making.

Table I. Teaching objectives for the bioethics and clinical ethics sub-programmes

Bioethics

- To teach the skills of ethical analysis and argumentation essential to making good and consistent moral choices;
- to sensitise students to ethical and legal issues in everyday clinical practice;
- to promote and enhance critical reflection on the students' own personal values and the obligations of a practitioner of medicine to patients, society, and even to themselves;
- to identify the value assumptions and substantive ethical principles and concepts underlying clinical decisions.

Clinical Ethics

- To provide students with a systematic and critical approach to clinical ethical decision-making;
- to establish a concrete link between clinical ethical theory and practice;
- to teach students to generalise bioethical principles and concepts in such a way that they can recognise "new" and unfamiliar clinical-ethical issues throughout their career.

Because bioethics is an essential part of clinical reasoning and decision-making, it has been integrated within clinical problem-based learning (Domain 3) and spread throughout all five years of the undergraduate programme. Each year a new ethical principle and related rules and concepts are emphasized and examined together with what has been learned in the previous years (Mitchell et al., 1992).

In Year One, for example, the fundamental principle of *respect for the person*'s or patien'st autonomy is introduced, when students commence their formal training in Professional Skills (e.g., medical interviewing, communication skills and physical examination) and study the problems of homeostasis, ranging from biological mechanisms, through psychiatric disturbance to community levels. The principle of *autonomy* and the obligations it engenders for the doctor-patient relationship was chosen to begin the students' exposure to bioethics. Because autonomy - that is the extent to which a patient exercises self-determination with respect to health matters -and homeostasis, are both matters of checks and balances, it seemed a logical way to focus on the person as a *whole* and his or her family and community network, rather than on an "isolated" medical problem.

In Years Two and Three, where cardiac, respiratory, neurological, psychiatric and other medical problems are studied for the first time, the ethical principles of *non-maleficence* (do no harm) and *beneficence* (prevent harm, do good) as well as the concepts of due care, best interests, burdens and benefits and quality of life are added to those studied in Year One. Finally, in Years Four and Five, students extend this foundation to include the ethical principle of justice, systems of health care and issues of resource allocation. Simultaneously they begin to apply these principles to specific areas of medicine in their clinical rotations. Table II provides an overview of how bioethics is integrated with the problem-based learning of Years One and Two.

Table II. Integration of bioehtics with problem-based learning

MEDICAL TOPIC	**ETHICAL TOPIC**	**EXAMPLES OF ISSUES**
Year 1:		
1. Homeostasis - Retardation - Nutrition - Depression - Trauma - Suicide	Autonomy Confidentiality Veracity Privacy	Ethical theories and Autonomous behaviour Valid consent Disclosure standards Impaired understanding Patient competence Patient incompetence
2. Renal Problems	Due Care Negligence	Refusal of treatment Minors Truth-Telling and "facts" Privacy and the patient
Year 2:		
1. Cardio-vascular & Respiratory Problems	**New**: Do No Harm Burdens and Benefits Best Interests Quality of Life	Killing and letting die Duty of care Slippery slope Optional and obligatory means Withholding and withdrawal Artificial nutrition and hydration
2. Neurological & Psychiatric Problems	**From Year 1**: Autonomy Confidentiality Veracity Privacy Due Care	Assisted suicide and death Euthanasia Proxy decision-making Autonomy vs Non-Maleficence conflicts
3. Haematological & Endocrine Problems	Negligence	

In all years, the ethical principles, rules and concepts arise out of the clinical content and are identified and examined through a series of formal seminars discussed in small groups in the context of their current problem-based learning, and then applied to other simulated clinical cases (Table II). Although the teaching strategies vary from year to year (role play, class debates, video taped cases), we endeavour to maintain a problem-based learning format. Students are also expected to use the ethical principles, rules and concepts which they have studied in previous years to assist their ethical analysis and reasoning of current cases (Table II). The details of each seminar are contained in a resource book, which lists the ethical principle(s) and rules under discussion, the major concepts, related ethico-legal issues, a seminar focus with details of tutor input, case trigger titles, descriptions and questions, tutors, suggested reading and a set of articles. The resource book also contains the "curriculum road-map[1]", aims, textbook details, assessment advice and student evaluation. Students are invited to offer comments in person, or, in writing on any aspect of the seminars or programme for that year. Over the years, students' feedback has resulted in a number of important and constructive changes to the way we conduct our seminars. For example, small-group discussions were specifically introduced at the request of students. Every two years or so, a more formal written evaluation of each year is completed by students. The results, together with changes in the curriculum, are reported back to the students. Each student receives a copy of the resource book on a year by year basis.

Clinical Ethics Practice. This was first introduced in 1991 for Years Four and Five. The main aim is to ensure that clinical decisions made by students are ethically justifiable. This sub-programme has two components. The first component, *Clinical Ethics as a Professional Skill*, was introduced to focus specifically on the skills associated with clinical ethical reasoning and decision-making and to help students to apply the knowledge acquired in the formal bioethics seminars to actual clinical practice (Clouser, 1989). The sub-programme comprises seven 90-minutes *practical skills* sessions of spread over Years Four and Five and builds on the knowledge acquired from their bioethics sub-programme (Myser et al., 1993a, unpublished).

The second component, *Clinical Ethics and Clinical Attachments*, relies on the Faculty's clinical academics and others to provide opportunities for students to consolidate their learning and demonstrate its relevance to everyday clinical practice. Still in the early stages of development, the aim of this component of the Clinical Ethics sub-programme is for Faculty clinicians to reinforce the formal teaching that occurs in the Clinical Ethics Professional Skills seminars by using the clinical context as their classroom. Through this experience students begin to learn how actual medical circumstances, time constraints, the interactions between patients and doctors, and conflict between differing values and beliefs of patients and health care professionals may influence clinical ethical analysis and decision-making. It is precisely this potent intermingling of the technical, contextual, personal and moral dimensions of shared decision-making that we and others (e.g. Forrow et al., 1991) regard as a fertile base for student learning.

---

[1] This is a listing of ethical principle(s), rules and concepts which will be covered in the year together with the major issues that arise from the content of Domain 3 for that year. The "roadmap" represents the limits to the knowledge to be acquired by the students.

Teaching Clinical Ethics. In helping students to apply their ethical knowledge to clinical practice as they move from the early to the later, and more clinically involved years of medical education, two changes are necessary. We felt we needed to change the *educational* focus and employ a *teaching strategy* which would facilitate both the acquisition and application of clinical ethical skills. Experience has shown (Clouser et al., 1989) that teaching strategies which require students to simply apply previously learnt ethical principles to the wide range of cases they meet in their different clinical rotations do little to help students to overcome the difficulties of applying knowledge about bioethical theory to actual clinical ethical practice. This kind of "engineering" or "check-list" approach to decision-making does not identify for students the necessary *step-by-step* process that links reflection to action, nor does it take account of the situational factors which may serve to constrain and hinder sound decision-making.

The teaching method must provide a *systematic* approach to clinical ethical reasoning. It should aim to overcome *two* predictable deficiencies as students move from early to later clinical training: (i) a lack of an *orderly approach* to identifying the ethical aspects of various clinical problems, and (ii) a lack of a *strategy or plan* for relating these ethical aspects back to *prima faciae* ethical principles and concepts. Table III summarizes what students are expected to do when they are involved in clinical decision-making.

Teachers

In the early years at Newcastle, Australia the teachers of ethics were essentially philosophers with an interest in medical practice, self-trained bioethicists and a few interested clinical academics. Needless to say, there was much debate on issues such as who should teach bioethics, whose "ethics" was being taught and the role that clinicians should play in the teaching programme. We now have over 40 medical and non-medical tutors involved in the teaching of bioethics and clinical ethics practice. The composition and background of the tutors now approximate the range of professions actively involved in bioethical debate. For example, the teachers include 28 clinicians (one of whom has studied philosophy), one clinical ethicist, one philosopher, one sociologist, two psychologists (one of whom is self-trained in bioethics) and six lawyers, three of whom are medically qualified. Each seminar has usually two or three tutors, including a clinician, a bioethicist and others. Hospital-based clinicians are also involved as tutors in the clinical attachments in Years Four and Five.

Assessment

Traditionally, problem-based learning and bioethics at the University of Newcastle has been assessed through the use of the Modified Essay Question (MEQ) (Feletti and Engel, 1980; Mitchell et al., 1993). End-of-year assessments in bioethics, usually of 30 minutes duration, are carried out for all years of the curriculum and take the form of a clinical case with appropriate questions. Faculty policy regards failure in bioethics in the same way as failure in any other basic or clinical discipline. The MEQ is essentially the step-by-step unfolding of a clinical case. For each step, students are required to provide answers to questions of 5, 10 or sometimes 15 minutes' duration. Model answers are written and assessors identified at the same time as the actual assessment is constructed.

Table III. The ethical dimensions of clinical decision-making - What students are expected to be able to do

1. Get the facts: medical, social, and ethical histories; physical examination; relevant investigations.
2. Identify existing and/or anticipated ethical issues.
3. Distinguish medical, ethical, social, and legal issues.
4. Determine which bioethical principles and/or concepts are relevant (e.g., For whom? Why? When?) to clinical-ethical decision-making.
5. Identify existing and/or anticipated conflicts between principle-based obligations.
6. Explain why principle-based obligations clash.
7. State clinical - ethical decision.

   Specify how guiding principles should be balanced.
8. Justify clinical - ethical decision, e.g., specify how guiding principles should be balanced and why.
9. Consider possible objections to the decision.
10. Consider counter-arguments to objections.
11. Identify relevant laws and how they might guide management.
12. Examine relationship between clinical - ethical decision and law.
13. Argue which of the ethical and legal obligations in this case should guide decision-making and why? Where the law provides guidance, incorporate considerations of where it is deficient and where it needs reform.

Formats like the MEQ, or the simulated clinical case study format (Spooner et al., 1989) permit assessment whether students have assimilated a core of knowledge and may provide some evidence of their ethical sensitivity, reflection and reasoning skills (Hebert et al., 1990). Such tools do not adequately assess *how* students make ethically justifiable clinical

decisions (Mitchell et al., 1993). The standard medical long case is also unsuitable for the assessment of clinical - ethical reasoning. In the standard medical long-case, for example, the student performs in a controlled and observed setting, with a real or simulated patient. There is neither a guarantee that the ethical dimensions of the case will be addressed, nor is there in those cases where ethical issues are raised, any way of knowing that all the data with ethical value were made available for analysis. We decided to modify the standard medical long-case to incorporate the need to examine the analysis of the ethical dimensions of the case as part of the decision-making process, and the need to consider the contribution of this analysis to the decisions made regarding the patient's management. There is no formal instrument as such, students are required to systematically work through the steps listed in Table IV for a particular clinical case and present it in written form. We have called this written analysis "The Clinical Ethics Case Report" (Myser et al., 1993b, unpublished).
The Clinical Ethics Case Report. Students are given four weeks in which to complete their assessment for the following reasons. First, the assessment occurs *during* and not at the end of the academic year when students are still burdened with the demands of other educational activities. Second, assessment should also be an opportunity to learn. Thus, the time allowed permits the learning and/or revision of both medical and ethical knowledge. Third, it allows students to use as many resources as they feel is appropriate in collecting and analysing the ethical issues of their case. At the end of the first week, each student is required to attend a small group session in which they present their patient case for clarification and approval. Once approved, the student is free to continue the work-up of the case. This step we feel is necessary in order to: (1) ensure that the cases are appropriate for assessment purposes; (2) identify which student is having difficulties in selecting a case with relevant issues, and to assist where necessary; and (3) address any ethical or personal concerns that students might have at this point. Students are provided with a copy of the formal "Rating Form" used by assessors to rate the case report to be submitted by them. Table IV outlines the major categories used by assessors to standardise the written case reports for rating purposes.

The Rating Form and the Assessors Task. The Rating Form provides for an initial *data section* (1.0 - 2.0), which the assessor uses to ensure that the student has provided all the relevant information necessary for an organised ethical analysis. The second part of the Rating Form (3.0 -7.0) requires the assessor to rate the student's analysis of the ethical dimensions of the case, their implications for clinical decision-making and the actual decision made by them. This latter section (Table IV) is organised around the identification and analysis of the clinical ethical issues raised by the case, arguments which justify the decision made, objections and counter-arguments. The third part of the Rating Form (8.0-9.0) requires the assessor to rate how well students have examined and related the existing law and their clinical ethical decision, as well as a critique of the actual decision made by the patient's health care team. Finally, the assessor provides an overall rating of the students' ethical competence (10.0). For the initial assessment, carried out in 1993, three assessors were used, one had a medical background and the other two were bioethicists.

Table IV. Content expected in the Clinical Ethics Written Case Report

Data

1.0 Medical, social and ethics histories
    Findings on physical examination (incl. decision-making capacity)
    Results of relevant investigations
2.0 Data presentation & organisation

Analysis of ethical dimensions of clinical decision-making

3.0 Ethical issues
    3.1 Existing and/or anticipated ethical issues
    3.2 Ethical issues distinguished from medical and social issues
4.0 Ethical principles and concepts
    4.1 Determined relevant ethical principles
    4.2 Determined relevant ethical concepts
5.0 Conflicts among principle-based obligations
    5.1 Identified existing conflicts between obligations
    5.2 Anticipated conflicts between obligations
    5.3 Explained why principle-based obligations clash
6.0 Specification of how guiding principles should be balanced
7.0 Clinical ethical decision
    7.1 Clearly stated clinical ethical decision
    7.2 Justified decision
    7.3 Considered possible objections to decision
    7.4 Considered counterarguments to objections
8.0 Legal analysis
    8.1 Identified relevant laws which might guide management
    8.2 Examined relationship between clinical decision and law
    8.3 Argued which ethics or law should guide clinical management
9.0 Critical appraisal of actual decision made by health care team
    9.1 Statement of actual decision
    9.2 Critique of actual decision
10.0 Overall competence of student as demonstrated in his/her handling of the ethical dimensions of the case.

In order to ensure that assessors were fully aware of the assessment task on which the Case Report was based, a document was provided which clearly identified: (1) the objectives of the clinical ethics sub-programme; (2) the training process; (3) the assessment task based on that process; (4) the major clinical ethical decision-making skills to be assessed; and (5) an Appendix similar to the standard medical long case which elaborated the categories of data collection to be assessed. An assessor training session was also scheduled to ensure an acceptable level of reliability in all ratings. Student performance on the Case Report was rated as either Non-Satisfactory, Satisfactory, Very Satisfactory or Excellent, with assessor comments recorded for a fuller understanding of the basis on which the assessor had made the ratings. To be *Satisfactory overall*, the student must generally be found satisfactory in each category *and its components*. However, deficiencies in specific categories were weighed against any mitigating circumstances (e.g., in some cases where the patient had died students were not permitted to speak with the family) and the *overall* quality of the student's written work before determining the level of assessment performance. It was anticipated that each Case Report would take between 20-30 minutes to mark (comparable with the standard medical long-case), and this proved to be fairly accurate. As a further check on reliability, all Case Reports rated as Non-Satisfactory were reviewed by the two bioethics assessors.

Students still judged to be Non-Satisfactory after the second review of their case report were required to undertake both remediation and reassessment in those aspects of the case found deficient. This took the form of two sessions with the assessors in which the student was given feedback and guidance for the re-submission of those parts of the Case Report found Non-Satisfactory.

Despite the increased time needed by the students to complete the assessment task and the time required to assess student performance compared with the time needed for an MEQ, we see the Clinical Ethics Case Report as having a number of advantages. It facilitates integration of assessment with clinical practice, it presents both a description of a coherent decision-making procedure and a model for future professional practice, it emphasizes process as well as content, and it reinforces the use of clinical - ethical professional skills in the management of patients. Furthermore, it constitutes a more thorough and valid assessment of clinical - ethical reasoning that supplements and consolidates the use of MEQ's.

Students and Staff Perceptions of the Programme

The greatest obstacle to introducing ethics programmes into medical schools is the monumental inertia of an existing and established curriculum. Strong allies among the Faculty, particularly the Dean, sympathetic clinicians, and money to purchase ethical expertise are essential. In the first several years, we learned that certain issues simply could not be made interesting to medical students, even though these issues arose directly out of the clinical problems being studied by students (e.g., nurse-doctor relationships, health policy). We refined the ethics curriculum each year, emphasizing those aspects of the clinical issues which facilitated students' understanding of clinical problems further downstream in the curriculum. The introduction of our focus on ethical principles, rules and concepts in the mid-80's reinforced students' awareness and use of ethical "tools" as portable from one medical system to another. Our experience has also shown that the further students proceed in the curriculum and the closer they come to grappling with the ethical issues associated with real patients, the stronger the motivation to learn. For example, the introduction of the sub-programme in Clinical Ethics for our senior students was met with an enormous increase in student and staff **acceptability** and **credibility**. Replacing the discussion of paper cases with real patients was very **effective** and helped students to realise, as no amount of teaching could, that what you can "do" in case management decision-making depends in good measure on what you "know" about ethical principles, rules and concepts. The introduction of the Clinical Case Report as the means for assessing student ethical competence was particularly effective as it further reinforced for students the interrelated nature of ethical reasoning and clinical decision-making. Many students, following their assessment, freely commented that the process of assessment was itself responsible for a new found appreciation of the importance of ethics to the clinical reasoning skills essential to good case management.

The Future

There remain many unanswered questions in relation to the design and evaluation of programmes in undergraduate (and postgraduate) ethics. There is a paucity of empirical research in both bioethics and clinical-ethics practice, and it remains to be shown whether teaching in bioethics and clinical ethics actually changes the ethics, clinical reasoning skills and/or behaviour of medical students who have been exposed to such undergraduate programmes. In recent years, attention has begun to focus on the basic curricular goals, content and strategies that should be adopted in teaching both bioethics and clinical ethics to students (e.g. Pellegrino et al., 1990; Seedhouse, 1991). However, more attention must be given to the equally important task of (1) identifying *what minimal knowledge and skills* should be taught to students to ensure a professionally accepted standard of clinical - ethical competence on graduation; and (2) how these multiple components of clinical ethical competence can or should be assessed in the context of clinical decision-making with real patients. Students who know that their assessment in clinical ethics will include not only knowledge, but also the employment of that knowledge as a professional skill in clinical management are more likely to structure their learning priorities towards the acquisition of those skills. In this way, both teaching and assessment can effectively contribute to students' learning.

The continued development of programmes in ethics (theoretical and clinical) and its assessment tools are important because of the light they shed on the relationship between bioethical theory and clinical practice. Such developments tell us *what* students have and have not learnt and *how* clinical ethics should be taught to enhance the former and reverse the latter. Perhaps the greatest challenge of bioethics is that it forces us to confront the question of what competences we should try to instill in our graduates and, what should be not only the proper ends and goals of medical education, but the ends and goals of health care itself.

Acknowledgement

We gratefully acknowledge the funding of Catherine Myser's position by the NSW Medical Defence Union.

References

Boyd, K.M. (Ed.) (1987). Report of a working party on the teaching of medical ethics. The Pond report. London, United Kingdom: IME Publications.

Clouser, D.K. (1989). Ethical theory and applied ethics: Reflections on connections. In: B. Hoffmaster, B. Freedman, & G. Fraser (Eds.). *Clinical ethics theory and practice*. New Jersey, NJ: Humana Press.

Engel, C.E. (1982). Problem-based Learning. In: K.R. Cox, & C.E. Ewan (Eds.). *The medical teacher*. Edinburgh, United Kingdom: Churchill-Livingstone.

Engel, C.E., & Clarke, R.M. (1979). Medical education with a difference. *Programmed Learning and Educational Technology, 16*, 70-87.

Feletti, G.I., & Engel, C.E. (1980). The modified essay question for testing problem-solving skills. *The Medical Journal of Australia, 26, 79-80.*

Forrow, L., Arnold, R.M., & Frader, J. (1991). Teaching clinical ethics in the residency years: Preparing competent professionals. *Journal of Medicine and Philosophy, 16*, 93-112.

Hasekura, H., Fukushima, H., & Hiraide, K. (1990). Evaluation of lectures on medical ethics through students' drawings. *Medical Education, 24*, 42-45.

Hebert, P.C., Meslin, E.M., Dunn, E.V., Byrne, N., & Reid, S.R. (1990). Evaluating ethical sensitivity in medical students: Using vignettes as an instrument. *Journal of Medical Ethics, 16*, 141-145.

Hoffmaster, B., Freedman, B., & Fraser, G. (Eds) (1989). *Clinical ethics theory and practice*. New Jersey, NJ: Humana Press.

Jonsen, A.R., Siegler, M., & Winslade, W. (1986). Clinical ethics: A practical approach to ethical decisions in clinical medicine. New York, NY: McMillan.

Maddison, D. (1980). The University of Newcastle, New South Wales, Australia: Developing a new medical school. In: F.M. Katz, & T. Fülöp (Eds.). *Personnel for health care: Case studies of education programmes*. (Public Health Paper). Geneva, Switzerland: World Health Organization.

McMaster M.D. Program (1990). A case study of renewal in medical education. *Academic Medicine, 65*, 423-432.

Miles, S.H., Lane, L.W., Bickel, J., Walker, R.M., & Cassel, C.K. (1989). Medical ethics education: Coming of age. *Academic Medicine, 64*, 723-729.

Mitchell, K.R., Myser, C., & Lovat, T.J. (1992). Teaching bioethics to medical students: The Newcastle experience. *Medical Education, 26*, 290-300.

Mitchell, K.R., Myser, C., & Kerridge, I.H. (1993). Assessing the clinical ethical competence of undergraduate medical students. *Journal of Medical Ethics, 19*, 1-7.

Myser, C., Kerridge, I.H., & Mitchell K.R. (1993a). Using the clinical case report to assess clinical ethics as a professional skill. *Medical Education* (submitted for publication).

Myser, C., Kerridge, I.H., & Mitchell, K.R. (1993b). Teaching clinical ethics as a professional skill: Bridging the gap between theory and practice. *Journal of Clinical Ethics* (submitted for publication).

Pellegrino, E.D., & McElhinney, T.K. (1982). *Teaching ethics, the humanities, and human values in medical schools: A ten year overview.* Washington, DC: Institute on Human Values in Medicine, Society for Health and Human Values.

Pellegrino, E. (1988). Clinical ethics: Biomedical ethics at the bedside. *Journal of the American Medical Association, 260,* 837-39.

Pellegrino, E.D., Siegler, M., & Singer, P.A. (1990). Teaching clinical ethics. *Journal of Clinical Ethics, 1,* 175-180.

Seedhouse, D.F. (1991). Health care ethics teaching for medical students. *Medical Education, 25,* 230-237.

Siegler, M., Pellegrino, E.D., & Singer, P.A. (1990). Clinical medical ethics. *Journal of Clinical Ethics, 1,* 5-9.

Spooner, H.J., Haight, K.R., Emson, H.E., & To, T. (1989). Assessment of medical students' learning and performance in an introductory medical ethics course. *Teaching and Learning in Medicine, 3,* 167-170.

Ten Have, H., & Kimsa, G.K. (1987). Medisch-ethisch onderwijs in de Verenigde Staten en in Nederland. *Nederlands Tijdschrift voor Geneeskunde, 131,* 1447-1449.

Veatch, R.M., & Sollitto, S. (1976). Medical ethics teaching: Report of a national survey. *Journal of the American Medical Association, 235,* 1030-1033.

Williams, J. (1986). *Biomedical ethics in Canada.* Queenstown, Canada: Edwin Mellen Press.

Wolstenholme, G. (1985). Teaching medical ethics in other countries. *Journal of Medical Ethics 11(1),* 22-24.

Annals of Community-Oriented Education
1994, Vol. 7, 167-172

Improving Effectiveness of Undergraduate Paediatric Teaching

M. Verma and T. Singh
Christian Medical College
Ludhiana, India

Abstract

Paediatrics has been the most neglected specialty as far as medical education in India is concerned. Although efforts are being made for many decades to increase the importance accorded to Paediatrics during undergraduate education, it is only very recently that the Medical Council of India agreed to allocate 12 weeks for a Paediatric posting during the medical course.

This communication describes the College's efforts to make paediatric teaching effective at a traditional medical school. Major emphasis has been on formative assessment to guide learning. Assessment strategies were not devised in isolation but were an integral and responsive part of the total teaching/learning system. Not only the academics but also the students, residents and nursing staff were involved in the assessment process.

Introduction

Paediatrics can be rightly called the "Cinderella" of medical education. The neglect of this specialty at the time India attained indpendence in 1947 has unfortunately continued until now. When India attained independence, there was hardly any paediatric care, either in teaching or in the service sector. Children were seen only when sick. Preventive and promotive paediatrics was unheard of. There were no separate paediatric wards - children were placed in adult male or female wards according to the sex of the attending relative (Barucha, 1977).

Over the years, the population explosion brought to the forefront the importance of ensuring child survival as an important means of population control. Some importance was given to paediatrics, and undergraduates were posted for a variable period of time to this discipline. However, the whole system of posting was disorganised, and, before anything meaningful could be taught, the posting came to an end. To add insult to injury, there was no final examination in paediatrics, with the result that average students devoted hardly any time to the study of paediatrics.

The persistent efforts of paediatricians in India paid dividends, and finally the Medical Council of India (MCI) agreed to give paediatrics its due in the form of 12 weeks of clinical

---

Requests for reprints should be sent to M.Verma, Christian Medical College, Department of Paediatrics, Ludhiana 141008, India.

attachment and a final examination (Medical Council of India, 1992). The College tries to exploit this opportunity to the full, so that paediatric teaching can contribute something worthwhile to the health of the children.

Teaching Methods

This communication describes the experiences and the various steps taken to make paediatric teaching more effective at the Christian Medical College. Here undergraduates are posted to paediatrics for a total of 14 weeks, when 11 weeks are spent in general paediatrics and 3 in neonatology. Students are on the ward for three hours in the morning and two hours in the evening every day. The time of posting and its location within the total course are illustrated in Figures 1 and 2.

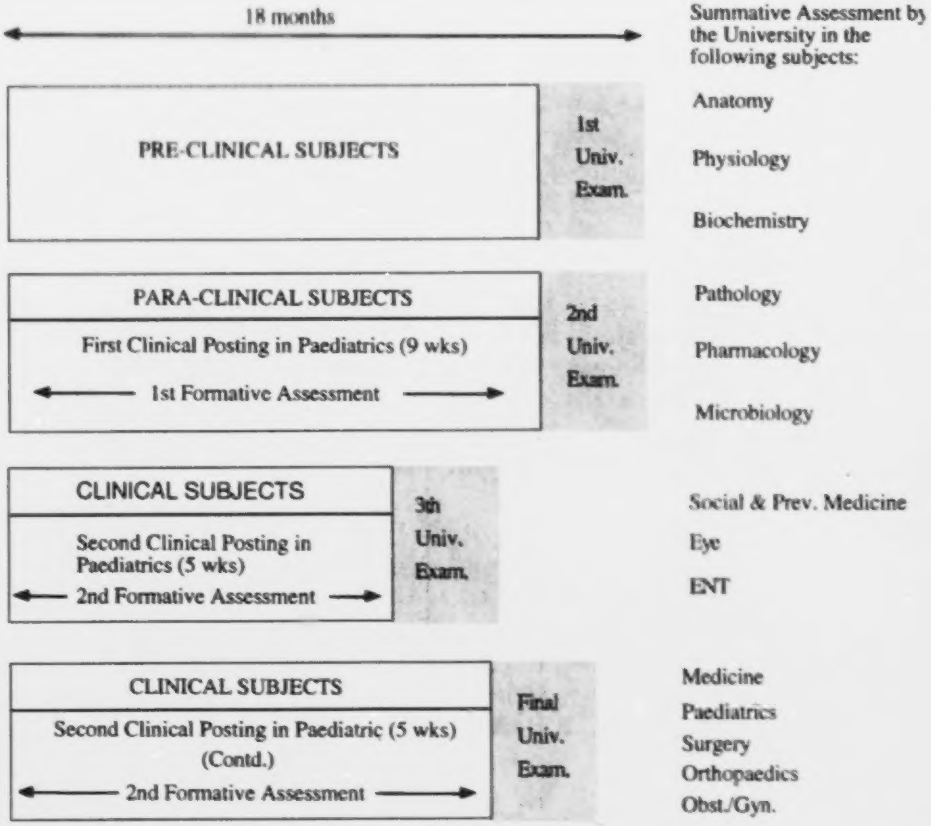
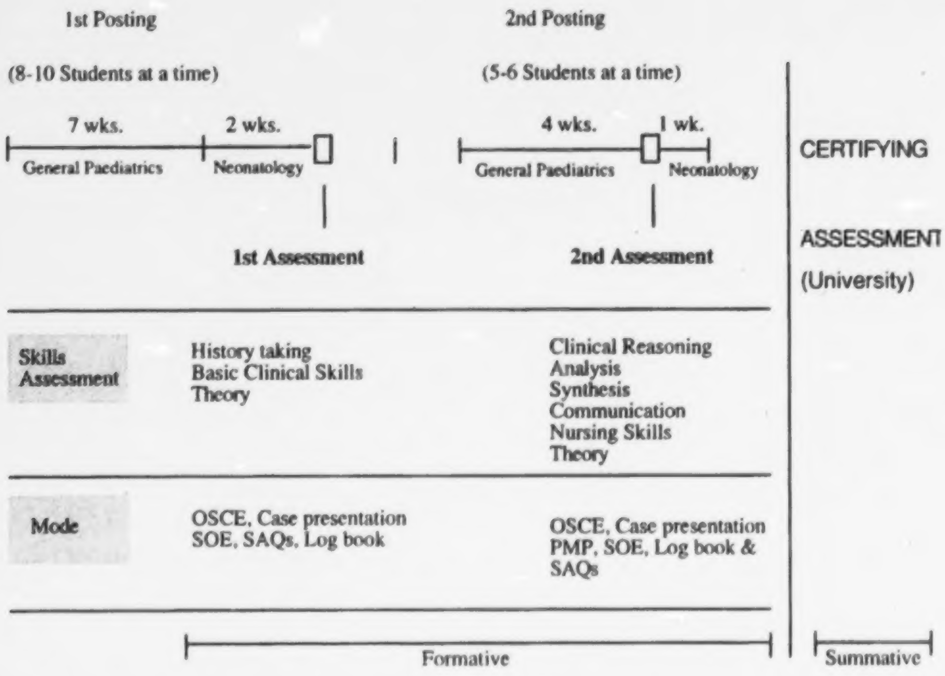

18 months
Summative Assessment b
the University in the
following subjects:
PRE-CLINICAL SUBJECTS
1st Univ. Exam.
Anatomy
Physiology
Biochemistry
PARA-CLINICAL SUBJECTS
First Clinical Posting in Paediatrics (9 wks)
1st Formative Assessment
2nd Univ. Exam.
Pathology
Pharmacology
Microbiology
CLINICAL SUBJECTS
Second Clinical Posting in Paediatrics (5 wks)
2nd Formative Assessment
3th Univ. Exam.
Social & Prev. Medicine
Eye
ENT
CLINICAL SUBJECTS
Second Clinical Posting in Paediatric (5 wks) (Contd.)
2nd Formative Assessment
Final Univ. Exam.
Medicine
Paediatrics
Surgery
Orthopaedics
Obst./Gyn.

Figure 1. Overall timetable for the medical course


1st Posting
(8-10 Students at a time)
7 wks.
2 wks.
General Paediatrics
Neonatology
1st Assessment
2nd Posting
(5-6 Students at a time)
4 wks.
1 wk.
General Paediatrics
Neonatology
2nd Assessment
CERTIFYING
ASSESSMENT
(University)
Skills Assessment
History taking
Basic Clinical Skills
Theory
Clinical Reasoning
Analysis
Synthesis
Communication
Nursing Skills
Theory
Mode
OSCE, Case presentation
SOE, SAQs, Log book
OSCE, Case presentation
PMP, SOE, Log book & SAQs
Formative
Summative

OSCE - Objective Structured Clinical Examination
SOE - Structured Oral Examination
SAQ - Short Answer Question
PMP - Patient Management Problem

Figure 2. Paediatric posting

All the three curricular components (Mamadi and Ravishanker, 1991), objectives, teaching methods and assessments are considered. It was felt that the undergraduate students should be well versed in common problems and health needs of children, rather than to know much about rarities and syndromes. Thus, the areas identified for emphasis included history taking, recording and interpretation of anthropometry, neonatal resuscitation, growth and development, feeding, immunisation, anaemia, malnutrition, diarrhoea, pneumonias and common infectious diseases, especially the vaccine preventable ones. Neonatal resuscitation is accorded special emphasis, both in theory as well as practice. For each area, objectives are specified and displayed on the notice board, so that the students become aware of the competence they should develop (Table I). The morning teaching is conducted by senior faculty staff, while evening teaching is given by postgraduate students who are recognised as teachers by the University.

BEST COPY AVAILABLE

Table I. Learning objectives - Anthropometry

At the end of this session, you should be able to:

- record weight of an infant using a lever type scale to an accuracy of + 50 gms;
- Measure lenght of an infant using infantometer to an accuracy of + 0.5 cms;
- measure head circumference of an infant using a fibreglass tape to an accuracy of + 0.5 cms;
- plot these measurements correctly on appropriate growth charts;
- interpret the growth pattern of the child as indicated by these measurements.

Students are also given demonstrations of common procedures such as injections, exchange transfusions, lumbar puncture and subdural tap. They are encouraged to perform these procedures under supervision, especially giving intra-muscular, subcutaneous and intradermal injections in child welfare clinics. The morning teaching schedule has been kept flexible and includes teaching by senior staff on cases clerked by the students. Emphasis is laid on a problem-solving approach and the development of clinical reasoning, rather than on mere recall of facts. Community aspects are emphasized for each topic. On two days a week, teaching is conducted in the Outpatients Department (OPD), so that the students are exposed to ambulatory problems. Our OPD also houses a child welfare clinic, so that preventive and curative work is practised side by side every day.

Another important strategy is to involve the ward sister in the teaching. For one morning each week the students are taught common nursing procedures like recording temperature, perineal care in diarrhoea, care of sick babies, positioning of limbs in acute polio myelitis and related aspects (Fig. 3).

Postgraduate students share the responsibility for undergraduate teaching. To ensure that postgraduates teach effectively, regular micro-teaching sessions (Kochhar, 1981) are conducted. In these sessions an academic teaches a "class", usually formed by peers, for a period of about 5-7 minutes. "The students" then provide feedback on the method of teaching. The academic then teaches again after incorporating the suggested changes. The emphasis is here on method and not contents. The postgraduates are also encouraged to attend teaching sessions by senior staff.

The students are expected to keep a record of the patients in their care in a log book. They are required to write histories of ten patients during their posting. Here again, the emphasis is on common childhood illnesses and infectious diseases. A deliberate effort is made to avoid rarities and syndromes. Each history is to be presented to a teacher and graded. At the end of the posting, an overall grade for the records is awarded by the head of the Department.

	Mon	Tue	Wed	Thu	Fri	Sat
Morning session 10 a.m. - 1 p.m.	WCP	WCP	WCP	WCP	WCP/ Nursing Session	WCP*
Afternoon session 3 - 4 p.m.	Tutorials • PMP	Theory Lecture**		Theory Lecture	Theory Lecture	–
6 - 8 p.m.	WCP	WCP	WCP	WCP	WCP	

*	During 4th year only. (Saturdays)	WCP	Ward Clinical Posting
•	During 4th year - Jan. to October	PMP	Patient Management Problem
**	During 3rd year - 24 didactic lectures		

Assessment

It is well accepted that learning is influenced most by assessment. (De Cecco and Crawford, 1988). To exploit this principle fully, the authors place a major emphasis on formative assessment.[1] The students are assessed twice during the course - once at the end of 9 weeks and at the end of 13 weeks. The first assessment, emphasizes basic clinical competences, while the second concentrates on problem solving through clinical reasoning. The final, certifying assessment is conducted by the University at the end of the 4.5 years course (Fig. 2).

In both assessments, half the weighting is given to theory. The question paper is usually of one hour and contains between eight to ten short answer questions. The questions are based on day to day practical situations. Some questions relate to interpretation of history and physical findings, while others concentrate on common laboratory investigations. A question on drug dosage is invariably included. The students are actively involved in the process; they check each other's answers under the supervision of a teacher. This provides an opportunity for immediate feedback, as well as helping to clarify any doubts that they may have.

In the first assessment, emphasis is also placed on clinical skills which are assessed through an Objective Structured Clinical Examination (OSCE). In general, this includes - history taking, immunisation, growth and development, dietary intake and elicitation of common physical signs. A nursing station is also included. For each station, standard check lists have been developed with differential weighting for different tasks (Verma and Singh, 1993). In addition, a case presentation emphasizes history taking and interpretation of physical signs, rather than on making a diagnosis.

---

[1] Formative assessment: informal, non-judgemental opportunity for students to identify their strengths and weaknesses.

For the second assessment, clinical case presentation forms the main activity. Emphasis is now on assessing higher levels of the cognitive domain, vis. analysing, synthesizing and clinical reasoning. During case presentation, an effort is made to assess the student's overall understanding of the patient's problem. The student is required to analyse the history and physical findings and arrive at a working diagnosis, order relevant investigations, and suggest a line of treatment.

The clinical examinations are supplemented by structured oral examinations (SOE) in a viva to test the analytical and reasoning power of the student, as well as to assess power of expression and skills of communication.

Conclusion

A number of variables have been addressed to make paediatric teaching effective. However, major emphasis has been laid on the assessment of students as a guiding force. Assessment has not been used in isolation - rather it has been used in association with explicit objectives and specific teaching methods, so that validity of assessment is assured. While the long term effects of this philosophy are yet to be identified, initial indications do suggest enhanced student interest in the discipline of paediatrics.

References

Barucha, P.E. (1977). History of paediatrics in India. In:*The child in India.* Bombay, India: Indian Academy of Paediatrics,1,1-14.

De Cecco, J.P., & Crawford, W. (1988). *The psychology of learning and instruction.* (2nd ed.). New Delhi, India: Prentice Hall.

Kochhar, S.K. (1981). Microteaching. In: *Methods and techniques of teaching.* New Delhi, India: Sterling Publishers.

Mamadi, M.R., & Ravishankar, S. (1991). *Curricular development and educational technology.* 3rd edition. New Delhi, India: Sterling Publishers.

Medical Council of India (1992).*Final recommendations of the workshop on need based curriculum for undergraduate medical education.* New Delhi, India: Medical Council of India.

Verma, M., & Singh, T. (1993). Experience with OSCE as a tool for formative evaluation in paediatrics. *Indian Paediatrics, 30,* 699-702.

Annals of Community-Oriented Education
1994, Vol. 7, 173-182

Student Participation and Valuation of the Training Programmes in Community Medical Education at the University of Ibadan

M.C. Asuzu
University College Hospital
Ibadan, Nigeria

Abstract

This study examines the influence of the different medical school postings, clerkships, courses, and teaching methods on the students' appreciation of the Ibadan community-based medical education. The strengthening of positive factors and lessening of negative ones are advocated to optimise this training programme.

Introduction

One of the main problems of health service organisation and delivery in developing countries is the distribution of health workers to meet the needs of the country (Morgan and Ransome-Kuti, 1973; World Health Organization, 1978). These problems include the specialty choices of doctors as well as the geographical (urban/rural) distribution of doctors. While some 80% of the medical needs of the communities can be met at the primary and secondary health care level, only 20% of the doctors may be found at those levels. While some 80% of the population live in rural areas, only some 20% of the doctors practise in those areas. Only 41 of the 505 local government authorities are served by medical officers of health (Asuzu et al., 1990).

These factors are part of what influenced the primary health care (PHC) revolution (World Health Organization, 1978). Although many auxiliary health workers are trained to meet these unserved needs, not much can be achieved without motivating and involving physicians in the Primary Health Care services. Many proposals, including differential pay for such staff (World Health Organization, 1978; Morgan and Ransome-Kuti, 1973), have not been implemented, for political and other reasons. Many would appear to be difficult to implement. The one proposal which appears within the reach of medical schools is improvement in training programmes with the aim to influence medical students to chose community medicine, general medical practice and rural medicine as a career (Brieger, 1979). Positive impacts have been demonstrated in Nigeria (Brieger, 1979; Asuzu, 1987; Omotara et al., 1991).

This study considers specific issues in community medical education at the University of Ibadan Medical School, to identify what needs to be reinforced or ameliorated in these training programmes.

Requests for reprints should be sent to M. Asuzu, University College Hospital, Department of Preventive and Social Medicine, Ibadan, Nigeria.

Programme and Evaluation Questionnaire

The Ibadan Medical School training programme in community medicine consists of five principal teaching blocks, with an additional two week revision course just before the final MB,BS examinations (Table I).The sub-disciplines of public health and community medicine are studied in the curriculum (Asuzu, 1993). Practical work gradually increases until it reaches its peak in the eight week residential Ibarapa rural health posting. In this posting the students design, execute, analyse, present and write up epidemiological studies in small groups of 6-8 students.

Evaluation of the Ibarapa posting used an anonymous questionnaire. This was administered after each posting to each of the four groups in the 1992/93 programme. Face validity of the questionnaire was established by the staff of the programme.

Results

Of the 193 students in the 1992/93 Ibarapa programme 192 took part in the exercise. Table II shows the level of participation that the students reckoned that they contributed to each of the five postings. Less than 50% of the class indicated high or very high participation in the first three training programmes, least of all in the introduction to community medicine course. All these three earlier courses were held on only one day in the week, while the students were involved in other courses: anatomy, physiology and biochemistry in the preclinical years, or in general internal medicine and surgery during the introductory course. Students who had resits in 1 or 2 of the 3 preclinical subjects at the 1st MB exams and who would be allowed to continue with the rest of the MBBS programme if they passed them at the resit exam in 3 months time, were allowed to combine the introductory clinical programmes with the resit revision course(s) in the relevant preclinical subject(s). This accounts for the lowest level of participation recorded in this course.

The latter two courses involved teaching in community medicine exclusively. Over 80% of the students indicated that they devoted high or very high participation to those courses. Tables III, IV and V show the course titles, individual sub-disciplinary community health subjects, as well as the students' perception of particular aspects of the teaching and learning. Tables VI and VII show the number of the students with negative perceptions of particular courses. Many of these perceptions related to courses in the preclinical years which lacked practical activities.

Logistic factors were mentioned negatively by a small number of students (11 of 192 students) in the Ibarapa posting. These factors included poorer accommodation and electricity or water supply in the rural area than in Ibadan, and inadequate supply of doctors and materials in the rural government hospital where part of the exercises were undertaken. Logistic problems, especially with transport facilities for the field trips, were mentioned by nine students.

Table I. The Ibadan 5 year undergraduate community medical education programme

Course title	Details
1. Basic biostatistics	2nd Semester of 1st Preclinical year. A theoretical course with a few problem solving exercises and end of course test
2. Man and his environment (MAHE)	1st Semester of 2nd Preclinical year. A theoretical course in medical sociology and ecology
3. Introduction to community medicine	12-week course, one day/week during the period between the preclinical course and three year clinical course. Theory and field visits to public health programmes
4. Block programme in community medicine	Six weeks in the 2nd Semester of the 1st Clinical year. Theory in all subdisciplines and topical issues in community health. Clinical attachments, problem solving exercises, tutorials, seminars and site visits to factory, health and other community medical services in the Ibadan metropolis
5. Ibarapa rural residential community health posting	Eight weeks in the 2nd Clinical year. Field practice in public health and general medical practice within the local and state government health service facilities. Seminars, tutorials, home assignments, and epidemiological study design, execution and write-up
6. Revision course in community health	Two weeks at the end of the 5-year training programme in the 3rd Clinical year. Theory and laboratory practicals

Table II. Students' perception of their participation in the programmes

	Level of participation (% of total)						
Course	**Very High**	**High**	**Average**	**Low**	**None**	**Not stated**	**Total**
1. Basic biostatistics	26 (13.5%)	67 (34.92%)	75 (39.1%)	21 (10.9%)	3 (1.6%)	0 (0%)	192 (100%)
2. Man and his environment	36 (18.7%)	57 (29.7%)	67 (34.9%)	23 (12.0%)	8 (4.2%)	1 (0.5%)	192 (100%)
3. Introduction to community medicine	29 (15.1%)	47 (24.5%)	45 (23.4%)	21 (10.9%)	43 (22.4%)	7 (3.6%)	192 (100%)
4. Block posting	80 (41.7%)	75 (39.1%)	27 (14.1%)	7 (3.6%)	2 (1.0%)	1 (0.5%)	192 (100%)
5. Ibarapa posting	78 (40.6%)	85 (44.3%)	25 (13.0%)	3 (1.6%)	0 (0%)	1 (0.5%)	192 (100%)

X^2 at 1 def: 1 vs 2; 2 vs 3; 1 vs 3 Not significant; 4 vs 1, 2 or 3 & 5 vs 1, 2 or 3, $P<0.01$.; 1 vs 3 $X^2 = 1.4$, $P> 0.05$; 1 vs 4: $X^2 = 21.5$, $P<0.01$; 1 vs 5: $X^2 = 28.3$, $P<0.01$.

BEST COPY AVAILABLE

A X^2 test of association between low participation in the programmes and negative perception of community medicine was significant for the first tree courses (Biostatistics: $X^2 = 3.95$; df = 1; $p < 0.05$; Man and his environment: $X^2 = 10.8$, df = 1; $p < 0.01$; Introduction to community medicine: $X^2 = 15.8$, df = 1, $p < 0.01$). There was no statistically significant association between attendance level and positive or negative perceptions of the latter two courses (table VIII). It is not possible to establish from the design of the questionnaire whether poor participation was the result of the negative impact of those earlier three courses.

Table III. Perceived usefulness of community medicine training programmes by the students

Course	**No. of students (%)**	
Basic biostatistics	29	(15.1%)
Man and his environment	40	(20.8%)
Introduction to community medicine	22	(11.4%)
Block posting	116	(60.4%)
Ibarapa posting	151	(78.6%)

Table IV. Students' positive appreciation of the disciplines

Subject	**Number of Students (%)**	**Subject**	**Number of Students (%)**
Maternal & child health	65 (33.9%)	Social medicine	35 (19.2%)
Health education	65 (33.9%)	biostatistics	29 (15.1%)
Environmental health	59 (30.7%)	Health management primary health care	25 (13.0%)
Occupational health	42 (21.9%)	Medical Sociology	22 (11.4%)
epidemiology	38 (19.8%)	Medical Ethics	2 (1.0%)

Table V. Students' positive perception of their experiences

Aspect	No. of students	(%)
1. Participatory and practical exercises, including field trips and study project	106	(55.2%)
2. Influence of teacher/good teaching	67	(34.9%)
3. Tutorials and small group sessions	50	(26.0%)
4. Proper timing of the course	30	(15.6%)
5. Continuous assessment	20	(10.4%)
6. Prospect of end of course test	13	(6.8%)
7. Shared objectives at the outset of course	10	(5.2%)
8. Others	21	(10.9%)

Table VI. Students' negative perceptions of community medicine

Courses	No. of Students	(%)
Biostatistics	85	(44.3%)
Man and his environment	53	(27.6%)
Introduction to community medicine	42	(21.9%)
Block posting	9	(4.7%)
Ibarapa posting	11	(5.7%)

Discussion

The ultimate aim of all medical education in community medicine and primary/family medical care (Community-based or Community-oriented medical education respectively) is to produce doctors whose specialisation and eventual practices will meet the needs of holistic health care. As many as 32% of medical students in Nigerian universities had identified their specialty of choice even before they entered their medical schools (Asuzu, 1987; Omotara et al., 1991). Medical education in the two schools with community-based

Table VII. Students' negative perceptions of their experiences

Reason	**No. of students (%)**	
Wrong timing/placement of the course	55	(28.6%)
Resit or impending examination in another subject/course	40	(20.8%)
Perceived irrelevance/unshared objectives of the course	25	(13.0%)
Teaching difficult to follow or understand	22	(11.4%)
Personal or family problems at the time	9	(4.7%)
Other organisational/logistic problems (class too large and roudy, course too sparcely organised, etc.)	11	(5.7%)

components showed only minor shifts in choices towards community medicine and general medical practice after the relevant community health postings. This makes it important to study the specific factors that helped students to appreciate the discipline better, so that such educational experiences can be improved to yield a maximum effect. However, the ultimate measure of this impact will be the percentage of medical graduates who enter community medicine or general practice, and those who practice at the primary or secondary health care level.

From the responses of our students it would appear that the following factors may yield the most important positive influence:

1. All courses in CBME should be as practical and participatory as possible. This would be particularly important for the two preclinical courses in the Ibadan programme. For example, the course in medical sociology could include questionnaire design and community diagnostic exercises and seminars.
2. The courses should not give the impression that they are minor programmes, while the students are battling with courses that are considered more important in the MBBS programme. If community medical courses are to be run simultaneously, blocks of time should be created when community medicine would be the only courses for the students. This is especially important at times when success in the next examination will determine whether the students will progress to the next part of their programme.

Table VIII. Relationship between low attendance during course and negative perception

Course and attendance rating		**Negative influence**			
		Yes	**Other**	**Total**	
Biostatistics	Not High	54	45	99	$X^2 = 3.95$
	High	31	62	93	$P < 0.05$
	Total	85	107	192	
Man and his environment	Not High	38	61	99	$X^2 = 10.8$
	High	15	78	93	$P < 0.01$
	Total	53	139	192	
Introduction to community medicine	Not High	37	79	116	$X^2 = 15.8$
	High	5	72	76	$P < 0.01$
	Total	42	150	192	
Block posting	Not High	3	34	37	$X^2 = 0.44$
	High	6	149	155	$P > 0.7$
	Total	9	183	192	
Ibarapa posting	Not High	1	28	29	$X^2 = 0.02$
	High	10	153	163	$P > 0.95$
	Total	11	181	192	

3. Teacher training was the second most positively perceived issue by the students in relation to their appreciation of community medicine. Inadequate teacher training ranked third in the students' negative perception.
4. Methods of improving students' participation beyond the time allocated for the courses, such as regular assignments, attendance monitoring and end of posting assessment (possibly progress arresting), were strongly associated with appreciation of the discipline.
5. The use of small group tutorials or seminars which enhanced student participation, ranked third in the students' positive perception.
6. From the earliest possible time, and as frequently as possible, the overall health (including ethical/moral) objective of community and general practice medicine should be shared with the students, by demonstrating how they ensure better health service organisation and delivery for the profession and the population. This will help the students to appreciate the importance of the courses. The objectives of each individual course should be clearly explained to the students at the beginning of each course, and how the objectives relate to community health care for the greatest number of the people.
7. While one purpose of CBME is to expose the students to real medical practice situations as they exist in the country, it is important to realise that if this experience is very negative, the students may be negatively influenced. Adequate funds for accommodation and transportation facilities must thus be made available for this programme. The medical school should also liaise with government departments whose health facilities are used for these programmes, in order to provide such departments with at least some relevant staff and materials.

Conclusion

The single most important finding of this study is that the teaching of community medicine (or CBME) can create a negative impact if the teaching is tucked away in periods when the students are involved in other courses which are more influential for their immediate future in the medical school. This is the more so, when the objectives, relevance, and primary importance of the discipline has not been appreciated by the students. A more positive image can be created through teaching the disciplines in block posting periods when the students do nothing else. Measures to improve participation and practical relevance of the discipline are also important. Better conditions of service should be looked at to make careers in community medicine more attractive.

Acknowledgements

Grateful acknowledgement is made to all the medical students who took part in the evaluation for their participation and to Mr. Clement O. Jolade for secretarial assistance.

References

Asuzu, M.C. (1987). Post-graduate medical specialisation and career preferences among Nigerian medical students. *Nigerian Medical Journal, 17,* 185-188.

Asuzu, M.C. (1993). Community-based medical education: A review of the oldest programme at Ibadan, Nigeria. *Annals of Community-Oriented Education, 6,* 69-81. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Asuzu, M.C., Olumide, E.A., & Kale, O.O. (1990). National needs assessment study of field practice community medicine in Nigeria: Staff training needs and programmes. *West African Journal Medicine, 9i* 40-43.

Brieger, W.R. (1979). Attitudes of Nigerian medical students towards rural medical practice. *Journal of Medical Education, 54,* 427-429.

Morgan, R.W., & Ransome-Kuti (1973). Attitude of medical practitioners towards rural medical practice in Nigeria. *Nigerian Medical Journal, 1,* 3-12.

Omotara, B.A., Asuzu, M.C., & Padonu, M.K.O. (1991). Dynamics of medical students career and medical specialty choices, and their implications for medical education in developing countries: A Maiduguri Medical School study. *East African Medical Journal, 7,* 547-554.

World Health Organization (1978). *Primary Health Care: The report of the International Conference on Primary Health Care 6th-12th September 1978 at Alma Ata 1978.* Health for All Series no. 1 Geneva, Switzerland: World Health Organization.

Annals of Community-Oriented Education
1994, Vol. 7, 183-190

Practicability of the Results of Elective Studies in the Community

A. M. Mishriky
Suez Canal University
Ismailia, Egypt

Abstract

At the Faculty of Medicine, Suez Canal University (FOMSCU), elective studies are used as educational vehicles through which small groups of students learn to elect a research question for which an answer is needed by a consumer, usually the community. Thus, the objective is learning through provision of service. Assessment of students usually gives more emphasis to the educational component, while the service component is seldom assessed. The present aim is to study the trend of the selection of research topics over the last four years, to investigate the practicability of their recommendations and the obstacles that interfer with implementation.

Forty four elective studies were included for the analysis of trends. From these, 16 projects were selected through stratified random sampling to study the extent of the implementation of the recommendations. Structured interviews were carried out with the students who undertook the selected studies, as well as the consumers who were supposed to benefit from projects. The face-validity of the questionnaires was established and they were tested through a pilot study. Data were analysed using the Kappa Index of Agreement, and the Fisher Exact Test.

The results showed that most research topics were related to health system and population-based studies. From the students' point of view, the recommendations were implemented in 94 percent of the projects, and students participated actively in 62 percent of the projects. However, from the consumers' point of view, the figures were 56 percent and 31 percent respectively. The most important obstacles to implementation were inadequate follow-up and the unrealistic nature of the recommendations. The conclusion is that the service component of elective studies, and research in general, should be taken into consideration before, during and after the work is carried out.

Introduction

Community-based curricula need to, and do use the community extensively for educating students. Communities do not like to be used. They need to, and should be served. The challenge for curriculum planners is to plan and implement the community-based activities, so that both service to the community and relevance to students' learning are

Request for reprints should be sent to A. M. Mishriky, Suez Canal University, Faculty of Medicine, Department of Community Medicine, Ismailia, Egypt.

assured. This is possible, for example, in carrying out a research project to solve a health problem that is deeply felt by the community (Nooman, 1989).

These field projects constitute one of the main features of the community-oriented curriculum at the Suez Canal University.
The elective period consists of six weeks at the end of the Fourth Year of medical studies. This elective is allocated for projects initiated by the students. The process starts at the beginning of the year when students form small groups with four to six members. The group members define for themselves the area and the topic of interest. They then select a supervisor from among those faculty members who are interested in the topic. The process ends with the development of a protocol that the group has to defend before three experts in epidemiology, research methods and the relevant specialty, and their Fourth Year colleagues. Once the elective has been approved, the group has six weeks at the end of the year for field work, analysis, write-up, and final presentation before a similar panel of assessors.

One of the important characteristics is the provision of service to the community, or the consumer in general. However, this service component has not been assessed. The aim of the present study was to evaluate the service component of these elective studies, and the extent to which the results of the investigations were practicable.

Material and Methods

This study consisted of 44 elective projects which constituted all the elective studies undertaken by theFfourth Year students of the Faculty of Medicine, Suez Canal University (FOMSCU) during the last four years. They have been used to study the trend of selection of topics for applied research. From these, a stratified random sample of 16 projects was selected for in-depth assessment of the extent of implementation and practicability of the projects' recommendations. Stratification was based on the calendar year in which the study was done. The sample size was large enough to detect an anticipated proportion of 50 per cent implementation of the recommendations, with a standard error of 20 per cent.

A questionnaire was designed for data collection through structured interviews with the 16 groups of students who had undertaken the 16 research projects in the sample. This included questions about the recommendations from their study, what had been implemented and why, and the factors that had inhibited the execution of their action plan. Another set of questions was designed for gathering consumers' opinion about their expectations from the study, how far these had been satisfied, and the contributions made by the students to the implementation of their recommendations.

Face-validuty was established for both sets of questions, and they were tested for reliability in a pilot study. The data were analysed using the Kappa Index for Agreement (Sackett et al, 1985).

Results

The 44 projects were classified into four categories, according to the type of research.

Health systems research consisted of projects that evaluated an aspect of the health care delivery system. The projects also included appraisal and promotion of service, and even creation of a new system. This category constituted 37 per cent of the total number of studies.

Population-based research and survey studies were classified as the second category, with 34 per cent of the total. They consisted of studies directed to the population of a certain geographical area (e.g. Sinai), as well as community-based studies undertaken in camps, schools, and factories.

Medical education studies constituted 22 per cent of the total, while **laboratory experiments** came last with 7 per cent. Two projects were excluded from this classification; they consisted of an essay on administration, and the creation of a museum for the history of medicine.

Figure 1 illustrates the trend of the topics selected during the four year period. Medical education topics are at a relatively low level, while laboratory research is the least popular.

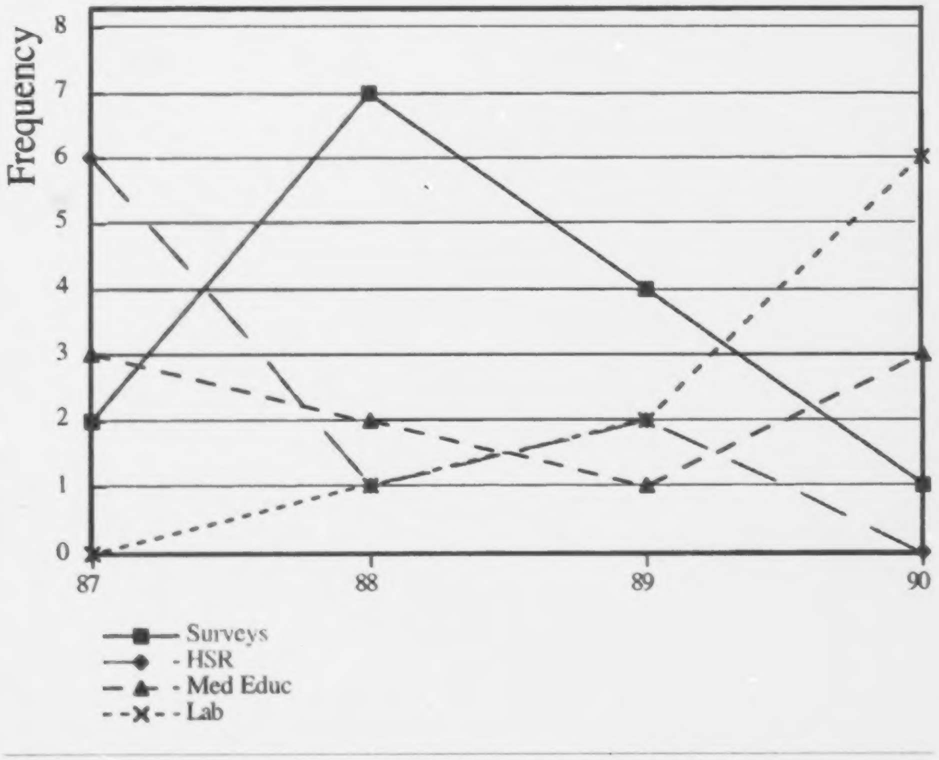


Figure 1. Trend of the types of research selected for elective studies

The 16 projects selected in the sample for the study were widely distributed across the Suez Canal area and Sinai. Although studies dealing with medical education were relatively over-represented in the sample (5/16), the largest number (6/16) were in the Health System Research category.

Table (I) shows how far the final recommendations were implemented from the viewpoint of the researchers (students) and the consumers. The students felt that the recommendations were implemented in 93.8 percent of the projects, while the consumers reduced this to 56.3 percent. The same disagreement is shown in Table (II) where the students and consumers were asked about the extent to which they had played an active role in implementing the final recommendations. More students thought that they had assumed an active role (62.5%) than the consumers admitted that they had (31.25%). Moreover, the students' opinion about the community's active role (75.0%) exceeded the opinion of the community about their own participation (56.3%).

In the students' view, the most important factor that helped in the fulfillment of the final recommendations was the cooperation of the consumers in the actual implementation. The consumers considered the follow-up by the students was the most important aspect. Other factors were the need of the consumer for the study, and the feasibility of the final recommendations.

Table I. Implementation of the final recommendations from the consumers' and students' point of view

Students	**Consumers**	**Opinion**	
Opinion	**Yes**	**No**	**Total**
Yes	9 (56.3%)	6 (37.5%)	15 (93.8%)
No	0 (0.0%)	1 (6.2%)	1 (6.2%)
Total	9 (56.3%)	7 (43.7%)	16 (100.0%)

Kappa Index=0.07

As regards the obstacles hindering the application of the results of the research, the most important one, from the students' point of view, was their inability to follow-up the implementation of their recommendations with the consumers and the decision makers. This was mostly due to shortage of time. Consumers thought it was the unrealistic nature of the recommendations. The two groups also disagreed on the feasibility of the recommendations. On the one hand, students considered that more than 50 per cent of the recommendations were feasible and realistic, and none were unrealistic. On the other hand, the consumers considered that about 50 per cent of the recommendations were not feasible (Fig. 2). For example, in a study dealing with the use of contraceptive methods

Table II. Perception of students and consumers about their respective active role in the implementation of the final recommendations

(a) Perception about the students' active role

Students	**Consumers**	**Opinion**	
Opinion	**Yes**	**No**	**Total**
Yes	5 (31.25%)	5 (31.25%)	10 (62.5%)
No	0 (0.0%)	6 (37.5%)	6 (37.5%)
Total	5 (31.25%)	11 (68.75%)	16 (100.0%)

Kappa Index = 0.02

(b) Perception about the consumers' active role

Students	**Consumers Opinion**		
Opinion	**Yes**	**No**	**Total**
Yes	8 (50.0%)	4 (25.0%)	12 (75.0%)
No	1 (6.3%)	3 (18.7%)	4 (25.0%)
Total	9 (56.3%)	7 (43.7%)	16 (100.0%)

Kappa Index = 0.33

in a given district, it was found that lack of awareness and false beliefs were the most important obstacles. It was recommended that the students, with the help of the local authorities and non-governmental organisations (NGOs) undertake a health education programme. This was not implemented because of the lack of follow-up by the students. The failure was anticipated by the consumers who found the recommendation not practicable, given the lack of time of all parties.

In another study, dealing with the prevalence of infectious skin diseases among military recruits, some sanitary regulations were recommended and were actually implemented by the decision makers who had initiated the study. Follow-up by the students was also important in the success.

The results of the studies, including results of diagnostic tests, and answers to research questions, as well as the recommendations, reached the consumers in good time in nine of the sixteen projects.

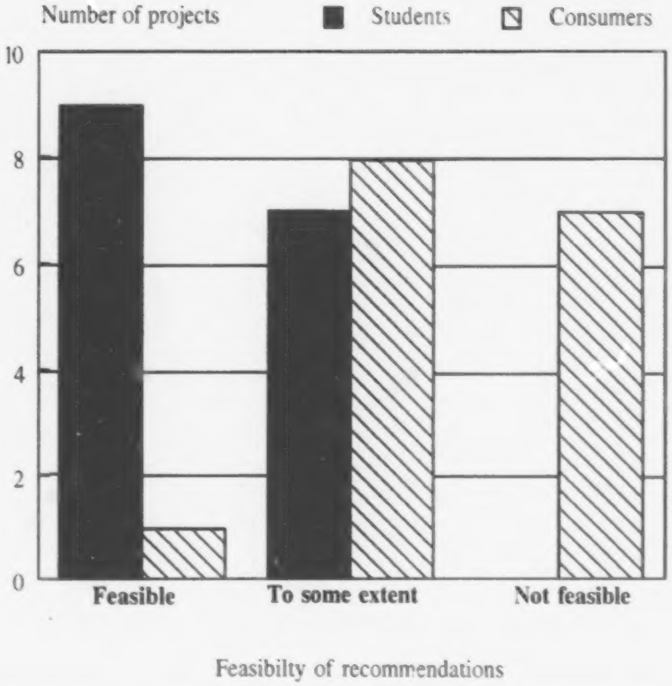


Figure 2. Opinion of students and consumers about the feasibility of the recommendations

Discussion

Electives represent an opportunity for students to make an independent choice to meet their needs and interests. At FOMSCU, electives are more geared towards research. The topics for research are selected by the students based on their observations during their training. They prefer less intervention from faculty members in the choice of their research topics (Hassan et al, 1990). Their training, mostly conducted in the community and in health care settings, does influence their choice. This is evident from the present study where 71 per cent of the topics were community-based and related to Health Systems Research. Because the students are in an innovative school, they are concerned about their learning in this new system of medical education that has been criticised or at least challenged by their colleagues in the traditional schools. This led to the selection of problems related to medical education in 22 per cent of the projects. The students' tendency to avoid, or their lack of interest in laboratory work, as shown by the small number of such studies, is reflected in the priority given to community-based projects that respond to community needs.

However, this might be a danger signal that could point to a problem for the basic sciences in community-based education. In fact, some investigators had warned that community-based medical schools might be in danger of returning to pre-Flexnerian apprenticeship programmes devoid of the scientific disciplines, and freed from the elaborate safeguards of medical science. This view was based on considerations of some complex educational problems associated with community-based teaching, for example, instructors with limited training in teaching, ensurance of comparability of students experience, monitoring students performance in dispersed settings, and maintaining adequate communication among those involved in the curriculum (Gordon et al, 1977).

The rapid decline over the years in the number of elective studies dealing with population and community might be explained by the fact that all the projects in the curriculum deal with such problems and serve as good substitutes for hands on projects. Hence, students select different topics for their electives. Moreover, population and community surveys are time and effort consuming, in addition to being more expensive. By contrast, Health Systems Research has shown a sharp rise from the second to the fourth year. This goes hand in hand with the increasing number of students trained in health care settings, and the increasing number of those settings used for the training of students. Students are sensitive to the daily problems of health care delivery, and are initiated to study such problem, in order to finding some solution.

The service provided to the consumer in population and community-based research differs from that in Health System Research. In the first category direct services are provided to the individuals in the form of diagnosis and/or treatment. In the second category the service is usually indirect and often not immediately felt by the consumer. This might explain the different responses of the consumers to such projects. The people would not readily accept the argument that they should allow themselves to be used by students today for the benefit they would get tomorrow from the new graduates. They would cooperate with the students whenever they expected that they would be served by the students and their teachers (Nooman, 1989). However, both categories of investigation are important, although the second might be longer lasting and serve a wider sector.

The increasing number of electives dealing with medical education (1989-1990) may reflect an increasing interest among students in assessing and improving aspects of the educational system. However, other factors might have influenced their choice. Among these are their feeling that such research receives more support from the School, as well as from international bodies. This is based on the frequent occasions when students had the opportunity to present their elective studies dealing with medical education at international meetings, supported by the school or international agencies.

As regards the extent to which the consumers benefit from these studies, students' opinion might be biased towards perfection of their work. The consumers' opinion is supported by actual observation which has shown that recommendations were fulfilled in only about 50 per cent of the projects. These observations were made by trained interviewers and based on an assessment of robust indicators, such as the introduction of a new measure. Bias was also evident in the opinion of the students that the active role of the consumers in fulfilling the final recommendations was greater than in the opinion of the consumers about themselves.

The conclusion is that in a community-based setting, the practicability of the results of research undertaken by students is still lower than expected. In order to increase such practicability, factors such as participation by the consumer at every step in the project, provision of the results in good time, and actual participation and follow-up by the researchers, should be given serious consideration.

References

Gordon, M., Hadac, R., & Smith, C. (1977). Evaluation of clinical training in the community. *Journal of Medical Education, 52,* 888-895.

Hassan, F., Hassan, A., & Ezzat, E. (1990). Students perception of field projects. *Annals of Community-Oriented Education, 3 (II),* 303-310. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Nooman, Z. (1989). *Implementation of a community-oriented curriculum : The task and the problems.* In: H. Schmidt, M. Lipkin, M. de Vries, & J. Greep (Eds.). New directions for medical education. New York, NY: Springer Verlag.

Sackett, D., Haynes, B., & Tugwell P. (1985). *Clinical epidemiology, a basic science for clinical medicine.* Boston, MA: Little, Brown and Company.

Annals of Community-Oriented Education
1994, Vol. 7, 191-198

POSTGRADUATE AND CONTINUING EDUCATION

Implementation Process of a Primary Care Residency Programme at the P. Universidad Catolica De Chile

J. Montero, R. Walker, V. Valdivieso, K. Puschel, T. Pantoja, B. Peñaloza and P. Rojas
P. Universidad Catolica de Chile
Santiago, Chile

Abstract

This paper describes the process of implementation of a postgraduate programme at the P. Universidad Catolica de Chile, "Medicina Interna General Ambulatoria" (MIGA) that partially resembles the Primary Care Internal Medicine residency programmes in the U.S.A.. This demonstration programme is funded jointly by the Ministry of Health, the Universidad Catolica de Chile and the local health systems where postgraduate doctors are trained. If the programme proves to be sucessfull and becomes institutionalised, it may contribute to filling the gap between the health needs of adults and postgraduate education in internal medicine.

Introduction

Altough innovative educational programmes have been successfully institutionalised at the undergraduate level (Friedman, 1990), less is known about innovative programmes at the postgraduate level. Community-oriented postgraduate programmes seem to be focused either on clinical activities or on public health. We describe in this paper the implementation process of a postgraduate programme that trains physicians both as clinical decision makers and as administrators/planners at the primary care level.

External Motives for Change

Several external forces supported the beginning of a Primary Care Medicine residency programme at the P. Universidad Catolica de Chile (P.U.C.).

Epidemiologic transition. As a consequence of demographic changes and socio-economical development, there is an increasing need for adult health care. Life expectancy has increased from 57.1 years in the nineteen sixties to 71.3 years at the end of the nineteen eighties. However, risk factors associated with the leading causes of death among adults (alcohol compsumption, smoking, high blood preassure, obesity and lack of exercise) are prevalent (Berrios et al., 1990). Health promotion and disease prevention requires new skills in health professionals.

Requests for reprints should be sent to J. Montero, P. Universidad Catolica de Chile, Department of Internal Medicine, Casilla 114-D, Santiago, Chile.

Chilean Society of Internal Medicine. The inability of traditional medicine to manage many of the chronic health problems generates a high level of frustration in patients and in doctors. This caused the Society to begin an extensive debate on health needs and internal medicine training. A meeting in August 1991 was attended by every school of medicine in Chile, and by representatives of other scientific and medical organisations and the Ministry of Health (Valdivieso, 1992). The need for a primary care general medicine specialist with strong skills as clinical decision maker and administrator/planner at the primary care level emerged as an attractive idea. A call for proposals for postgraduate programmes was extended to all medical schools in Chile.

Ministry of Health. The need for innovation in medical education has been supported by the government for a long time. In 1993 the Ministry of Health accepted to fund the programme jointly with the P.Universidad Catolica de Chile and the local health systems.

International initiatives. The need for relevant undergraduate and postgraduate medical training seems to be recognised internationally. The very existence of the Network of Community-oriented Educational Institutions for Health Sciences (Schmidt et al., 1991), that includes many prestigious medical schools from around the world, represents another strong support for the implementation of innovative programmes.

Internal Motives for Change

Curricular change and past community health initiatives at the P.U.C. Community-orientation was not an unfamiliar interest for the university. For more than a decade, groups of students had participated in different extra-curricular activities in the community, e.g. control of communicable diseases. Some members of the faculty and students had been asking for the formal inclusion of health promotion/disease prevention training at the undergraduate level. During the past few years, important curricular changes have been implemented at the P.U.C. in relation to community-orientation in problem-based learning during the "Introduction to medicine" course and an ambulatory clerkship in internal medicine for 4th-year medical students.

Young P.U.C. medical graduates. A group of young medical graduates, interested in primary care, met with staff of the Department of Internal Medicine in 1990 and asked for postgraduate education in primary care. This initiated a process of participatory planning, and four of these graduates entered the programme in May 1993.

Staff at the Internal Medicine Department at the PUC. In 1991 the W.K. Kellog Foundation funded the director and staff of this department who joined a group of deans of Chilean medical schools to visit a number of postgraduate programmes in family medicine/general internal medicine in South America and the USA. After leading the Chilean Society of Internal Medicine debate on education in internal medicine the Department presented a proposal for the MIGA programme to the Dean's Office and to the

Ministry of Health. The proposal was approved.

Dont Plan for too Long... Begin!

The implementation process began in May 1993 and was planned to last for the first six months of the programme. It included six main aspects.

Defining objectives

A list of learning objectives was developed with the participation of students and staff and approved by the Office of Postgraduate Studies of the P.U.C. Medical School in 1992. These learning objectives are not specified by disciplines, e.g. respiratory diseases, gastrointestinal diseases, but relate to professional responsibilities, as suggested by Abbatt (1992). A list of learning objectives was written for each of these responsibilities. This list included attitudes.(e.g. willingness to accept challenges), skills (e.g. participation in planning with the health care team) and knowledge (e.g. epidemiology of the main adult health problems).

At the end of the 3-year residency programme, the graduate should demonstrate proficiency as:

- clinical decision maker in primary care
  (acute and chronic health problems and emergency care)
- communicator/educator/collaborator;
- gatekeeper/resource manager;
- researcher of primary care problems;
- manager in community-oriented primary care programmes;
- self-directed learner.

Several of these responsabilities are very similar to those for physicians in Canada (EFPO Project, 1992).

Formal agreements

Several agreements were formalised or reinforced in order to support the programme. The main agreement is between the University and Comuna La Florida, where the mayority of the residents are practising. The other agreements connect the programme with the local health administrations where the rest of the residents are located.

The director and staff of the programme are making contact with key institutions, private health care organisations and occupational health organisations and participate in committees outside the university (e.g. design of a computarised information system in primary care) as a way to strenghten the programme and to make it part of a national effort.

General coordination

Selection of students. Students are selected by the traditional national selection system for medical graduates. Each physician gets a score before selection based on undergraduate medical education grades, postgraduate job experience, continuing medical education, and publications. In order to be able to apply for the MIGA programme, applicants have to be approved by a committe. Besides professional qualifications, personal qualities (e.g. leadership capabilities, willingness to work with underserved populations, creativity) and experience in primary care were considered by this committe in the pre-selection of applicants.

Organisation of the weekly schedule. One of the challenges during the implementation process was to balance education and service. The ambulatory health centres have their own needs and schedules that have to be balanced with the academic activities at the University.

Resources. A significant amount of time was dedicated to obtain resources. Human resources (e.g. staff, secretary) and physical resources (e.g. an office at the medical school for the coordinator, a seminar room, and a computer training centre with six IBM PC, books and suscriptions for journals).

Educational methods. Problem identification and reasoned decision making, instead of memorisation of information, had been recommended as the best educational methods long before the programme was approved (Montero, 1992).
As much problem-based learning as possible will be used, depending on available time and resources. At present, problem-based learning is used in the clinical seminars and some of the courses (e.g. adult education). Clinical seminars are based on real cases that students bring from their practice. First of all we analyse the case and define the main problem (e.g hypercholesteronaemia, asthma, hypertension). Then we review the generally accepted criteria for diagnosis and management and discuss the applicability of those guidelines to the settings of the residents' practice. Many questions arise, and new topics are explored. Finally, the group discusses the different alternatives for diagnosis and treatment with a specialist. Each topic lasts for three or four sessions.

The Primary Care Internal Medicine Residency Programme

Regular activities
The following activities are part of the MIGA programme during the whole 3-year course:
- Clinical work at the public ambulatory care facility (22 hours/week)
- Clinical work at the outpatient clinic (specialties) 8 hours/week
- Emergency care: 5 hours per week plus one Saturday (9:00 am to 11:00) a month.
- Community health: 4 hours a week
- Seminars:
  - Clinical decision making in primary care: 2 hours/week
  - Principles and values in Medicine 2 hours twice a month
  - Emergency care: 2 hours twice a month

Courses
Courses lasting from 1 to 16 weeks are distributed throughout the 3 years.

First year: Principles of adult education; The medical interview, Biostatistics; and Introduction to computer science.

The first is an intensive course (44 hours a week), free from other duties.

Second year: Interpersonal communication; Theoretical basis of health promotion and disease prevention; and Introduction to clinical epidemiology.

Third year: Introduction to health administration; and Grant writing.

The percentage of time spend in different activities is shown in Fig. 1.

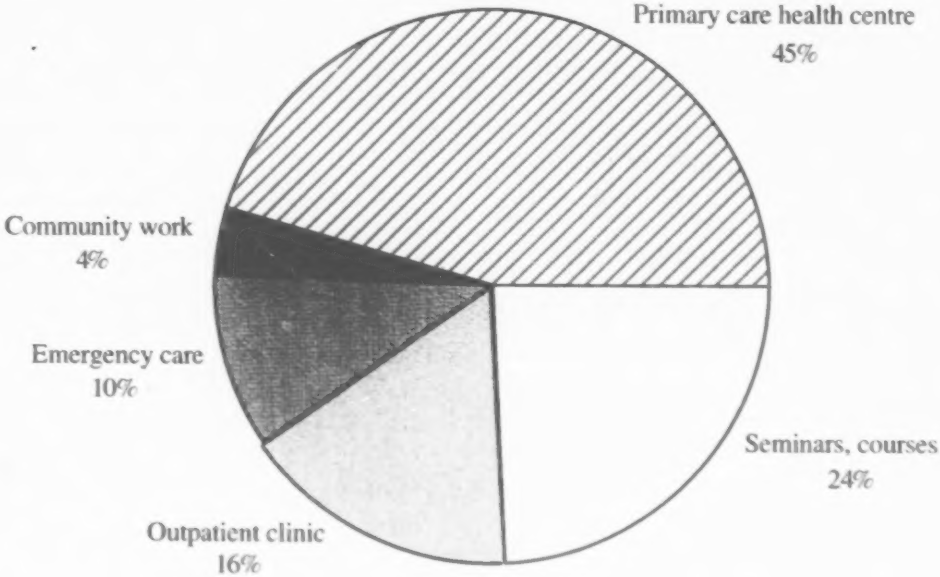


Figure 1. Percentage of time allocated to different learning experiences

Evaluation

Programme evaluation. Formative evaluation is considered important in the programme. A general meeting is planned at the end of each semester with representatives from the health centres with our residents, staff from the university and residents. The first of these meetings reviewed achievement of objectives and topics related with coordination. Important recommendations were made to facilitate achievement of objectives (e.g. to increase communication between participants, and involvement of representatives of the health system in curriculum design and teaching).

We decided to use the health centre as the criterion for analysis of most of the outcome evaluation. It is expected that the residency programme will have an impact on:

a) quality of care; b) patient satisfaction; c) resident satisfaction; and d) organisational climate and interdisciplinary work.

Staff from the university and directors from the health centres are defining indicators for these outcomes. Other indicators, such as trends related to applicants for the programme and positions obtained by the graduates, will also be considered.

Student assessment. Clinical activities: The residents are given immediate feedback during supervised clinical activities. Around 50 % of the practical work, including emergency care, is supervised. Once a month the residents meet with a tutor who discuss with them results of chart audits. At the end of each semester the residents have a written examination.

Community health: The residents have to complete a community diagnosis, including secondary data anlysis, provider interviews, and focus groups at community level. They have then to choose one of the main health problems of the community and plan, implement, and evaluate an intervention (health promotion/disease prevention from their health centre). This experience is intended to provide them with an outstanding opportunity for integrating epidemiology, planning and evaluation, research, health administration, and health education.

Group process/communication: A weekly meeting is organised to study and practise group process. The residents learn to receive and give feedback about their adaptation to and participation in change, and their interpersonal relationships.

We are in the process of selecting indicators and instruments to assess other general abilities (e.g. self-directed learning).

Getting Started

An intensive one-week workshop on adult education methods (Vella, 1989) proved to be a great start for the programme, because it set a climate of collaboration and willingness to learn among the participants. The importance of the climate has been recognised by many authors, and should be included among the recommended strategies for change. After all, *"the context is the direct source of the effects"* (Friedman et al., 1990).

Participatory curriculum design

Curriculum design is a big challenge for student-centred education. Altough many professionals agree that students should participate in some way in planning their own programmes, the lack of educational background makes this difficult.

The present programme was planned by staff and students from the very beginning. After five months at their community health centre, the group of seven residents and two tutors reviewed the learning objectives, using the method developed by Abbatt (1992) which has proved to be extremely helpful. This review and the formative evaluation with representatives from the health centres suggested a decrease in the amount of practical work, and strengthening of the health administration component of the residency programme.

Conclusions

In terms of the "recommended strategies for change" (Kaufman, 1985) the next steps should focus on building support and overcoming resistance through information and an invitation to participate. Communication between the participants of the programme, participation by the staff at the health centres in curriculum design, teaching, and integration between theory and practice seem to be the critical aspects that need to be improved during the coming year.

So far, participants at the university and in the local health systems have accepted the risks that go with any innovation. The enthusiasm and the positive expectations from within and from outside indicate that the programme may be targetting a critical need.

Graduates of the MIGA programme will be able to work in the public and the private system (e.g. occupational health). However, the question "What do these residents need to learn to be able to do a good job?" is difficult to answer in the context of a changing health care system. At the beginning of the democratic government (1989) there was much hope among primary care health professionals, but their expectantions were not met. Limited resource allocation and job instability are only a few of many uncertainties that make a community-oriented primary care approach very difficult. We hope that the improvements and policy changes that the democratic government has initiated in health care will be consolidated in the near future, so that initiatives such as the present can be institutionalised. Meanwhile, flexibility and targeting the learning experiences to the needs of each student could be a safeguard. Optional activities during the third year of the residency programme that is being explored as an alternative.

References

Abbatt, F.R. (1992). *Teaching for better learning.A guide for teachers of primary health care staff.* Geneva, Switzerland: World Health Organization.

Berrios, X., Jadue, L., Zenteno, J., Ross, M.I., & Rodriguez, H. (1990). Prevalencia de factores de riesgo de enfermedades crónicas, Estudio en población general de la Región Metropolitana, 1986-1987. *Rev.Med.Chile, 118*, 597-604.

EFPO Project (1992). *Part I. Summary: what people of Ontario need and expect from physicians.* Ottawa, Canada: University of Ottawa.

Friedman, C.P., Bliek, R., Greer, D.S., Mennin, S.P., Norman, G.R., Sheps, C.G., Swanson D.B., & Woodward, C.A. (1990). Charting the winds of change: Evaluating innovative medical curricula. *Academic Medicine, 65*, 8-14.

Kaufman, A. (1985). *Implementing problem-based medical education.* New York, NY: Springer Publishing.

Montero, J. (1992). Bases para el cambio de la educación medica. Rev Med Chile, 120, 76-80.

Schmidt, H.G., Neufeld,V.R., Nooman, Z.M., & Ogunbode, T. (1991). Network of community-oriented educational institutions for health sciences. *Academic Medicine, 66,* 259-263.

Valdivieso, V. (1992). La medicina interna en Chile. *Rev.Med.Chile, 129,*538.

Vella, J. (1989). *Learning to teach.* Training of trainers for community development. Save the children, OEF International.

Annals of Community-Oriented Education
1994, Vol. 7, 199-202

Learning Health Management through Innovative Methods

F. Saçaklioglu, K. Vatansever, S. Yalcin, N. Bakirci, S. Toker, V. Mevsim, A. Kizilkaya and O. Bolukbasi
Ege University
Izmir, Turkey

Abstract

As part of the Public Health Ph.D. programme, Health Management is taught to the students. A dynamic and flexible programme was designed, in order to present the principles of Health Management to the seven Ph.D. students. Introductory seminars, small group discussions, role-play, games, visits to different organisations, and panel-discussions were used. The main aim of the programme was to enable the students to be self-directed learners and to develop self-understanding/self-assessment skills, which are very valuable in management. The programme provided an opportunity for active participation. Students were encouraged to ask questions and discuss the problems. They gained a systematic way of thinking in approaching different problems. They studied group dynamics as a way of learning.

Introduction

The Public Health Ph.D. programme is carried out in two steps. During the first four semesters, the students are taught Epidemiology, Primary Health Care, Health Management, Occupational Health, Environmental Health, Mother and Child Health, Health Education, Medical Sociology, and Demography, followed by an oral examination. The second step is the preparation of the doctoral dissertation during the last two years.

Health Management (32 hours) is taught in the second semester. There was one lecturer and seven students in the Health Management course. Neither the lecturer nor the students wanted to run the programme as lectures. The main aims of the programme were:
- to enable the students to direct their own learning, in order to develop self-understanding/self-assessment skills;
- to establish a team spirit among the students, in order to foster cooperative learning; and
- to breakdown the barrier between students and teacher.

With one exception, all the students worked in the Health Centres for the Education Research Health District (Eser et al., 1994). One student worked in occupational health. As the students were working General Practitioners, the first part of the programme was not full time. In each semester they spent two half days in lectures.

Requests for reprints should be sent to F. Saçaklioglu, Ege University, Faculty of Medicine, Department of Public Health, 35100 Bornova, Izmir, Turkey.

The Education Research Health District is located in the metropolitan area of the city of Izmir and includes some slum settlements. It has a population of 150,000 and nine Health Centres. The district is run by the Ministry of Health and the Medical Faculty's Department of Public Health . Health care is provided by the Ministry of Health, and educational activities are run by the Faculty of Medicine.

The Health Management Programme

Two main topics were discussed.

A. The main concepts of management in general:

1. the specific terminology of management and administration;
2. a short lecture and a role-play exercise on leadership concepts and leadership styles;
3. games to demonstrate the decision making process by individuals and using group dynamics;
4. short lectures on systems analysis and problem solving;
5. group discussion on common problems in organisation.

B. The main concepts of health management:

1. management within the development of health care, management of health care as a dynamic process;
2. management of Primary Health Care;
3. comprehensive and selective health care organisations, such as primary health care centres and anti-tuberculosis and anti-malaria dispensaries respectively;
4. team-work in health care.

Educational Methods

Emphasis was given to active learning. The method would differ according to the subject. For instance, role-play for each type of leadership considered positive and negative aspects. A questionnaire was administered, in order for the students to understand their personal leadership profiles. The results of this questionnaire caused the education programme to be redesigned for particular leadership skills.

In addition to role-play, panel discussions, small group discussions, and games were used. Different games helped the students to observe themselves and each other in different situations. The decision making process was analysed through a game, where the students analysed each other and themselves in terms of participation in the decision making process, reactions during conflict, etc.

Health management issues were then studied, when national health care development was discussed. Hypothetical models were used, in order to develop a comprehensive approach to health problems.

While discussing issues of the health care organisation, the group found that their knowledge of management in Primary Health Care was insufficient. For that reason a panel discussion on Primary Health Care was organised. The lecturer gave a short talk on comprehensive and selective health care. In a discussion on the difficulties of integrating the vertical and horizontal health care institutions in Turkey, the student decided to investigate different selective health care organisations such as anti-tuberculosis and anti-leprosy dispensaries, Mother and Child Care Centres, etc. They organised individual and group visits to these institutions, and each student gave a seminar on vertical organisation.

At the beginning of the semester each student prepared a one week orientation seminar programme on management issues for doctors at health centres. These programmes were exchanged among the students to evaluate each other's work. In this way they learned to evaluate themselves and each other for their level of knowledge and comprehension.

Lastly, the design of an organogram and systems analyses issues were discussed. Each student designed an organogram for a different institution, such as a health centre, a Department of Public Health, a provincial health directorate, an Education Research Health District, or a factory. Through these organograms the relationship between the health care service provided by these organisations and their managerial structure could be analysed. Common problems in organisation and the mismatch between managers and the nature of the work were discussed. Systems analysis was used to foster a broader approach.

Evaluation of the Programme

At the end of the semester the students were asked to respond to a questionnaire.

1. *Were the educational methods appropriate?*
   The educational methods did supported the students active participation and gave them an opportunity to observe and evaluate themselves and each other. However, they had been used to classical methods of learning. In the beginning they could not appreciate how educative these methods were; they asked each other when their real education would start.
2. *What are the differences between classical educational methods and the new approach?*
   It has given us an opportunity of being equal with the teacher.
   It has motivated questioning and investigating.
   It has motivated active learning and participation.
   The students visited the library more frequent than before.
3. *Was the coverage of the subjects adequate?*
   They had learned the main aspects of health care management. They thought that it was their responsibility to continue their own education.
4. *What have you gained during this period?*
   In terms of your professional practice:
   They learned to approach a subject from different points of view.
   At the beginning health care management did not seem to present a subject for research,

but this education presented them with a challenge.

They developed their own views which enabled them to be more critical of themselves.

They started to implement small group discussions at their own workplace more frequently, and they have found opportunities to improve their managerial skills.

In terms of personality and evaluation:

They studied group dynamics and discipline.

They had an opportunity to observe themselves in different roles and obtain feedback about themselves.

Conclusion

Education in Turkey uses classical and conservative methods. This is also true for medical education. It is, therefore, very much difficult to change passive students into active learners.

This programme provided opportunities for active participation. Students were encouraged to ask questions and to discuss the problems. They gained a systematic way of thinking in approaching different problems. They studied group dynamics as a way of learning. They could observe themselves in different roles, and this was their first experience in self-directed learning.

The short term objective was to build the informational infrastructure for health management. For this objective the programme was effective. The results of the questionnaire showed that the students seem satisfied with the course, but that does not prove the long term effectiveness of the programme. As General Practitioners they will always deal with managerial problems, and they should find opportunities to use their knowledge in day to day practice.

Finally it was an educational and pleasant experience for the students and the lecturer. It was a dynamic period, motivating creativity in educational methods. Within the existing classical educational system it was like a breath of fresh air.

Bibliography

Eser, E., Mandiracioglu, A., Saçaklioglu, F., Karababa, A., Dogan, F., & Tokgöz, M. (1994). Patchwork in medical education: Rural internship. *Annals of Community-Oriented Education, 7,* 303-308. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Folmer, H. (1989). Common problems in organisation planning management of primary health care in developing countries. *Course Manual, Ch. 4,* 39-42, Zagreb, Croatia.

McMahon, R., Barton, E., & Piot, M. (1980). *On being in charge.* Geneva, Switzerland: World Health Organization.

Tarimo, E. (1988). *Making it work.* Geneva, Switzerland: World Health Organization.

Annals of Community-Oriented Education
1994, Vol. 7, 203-210

Education in Community Settings: The Fieldwork Component in a Problem-Based Curriculum for Primary Health Care Managers

G. De Virgilio, R. Guerra, A. Pinto, R.P. Frazzica, M. Babille
Istituto Superiore di Sanità
Rome, Italy

Abstract

This paper describes the fieldwork component of the "International Course For Primary Health Care Managers In Developing Countries" (ICHM) at the Istituto Superiore di Sanità in Rome, Italy. The field assignment lasts five months and follows a residential problem-based learning semester. Field stations are scattered throughout Africa, Asia and Latin America and are usually placed at the peripheral level. Great emphasis is placed on the involvement of the local counterpart in all stages of the study, from identification of objectives to the implementation and evaluation of the operational recommendations generated by the exercise. Topics under investigation may range from managerial problem assessment to community awareness stimulation in preparedness for epidemics; their common trait is a focus on the search for rapid, relevant and appropriate solutions to operational problems that hamper the full implementation of Primary Health Care services. The institutional aim of the course dictates that researches are conducted in community settings; the fieldwork is, therefore, relevant to the participant's future tasks, but also stimulates local management towards a community-based approach in the provision of health care.

Introduction

The "International Course For Primary Health Care Managers At District Level In Developing Countries" (ICHM) represents the contribution of the Italian Government Technical Co-operation (Direzione Generale per la Cooperazione allo Sviluppo, DGCS) to improving the managerial skills of health workers at intermediate level. The training is implemented by the Istituto Superiore di Sanità (ISS) which is the technical and scientific institute of the Italian National Health Service. ICHM works closely with the World Health Organization (WHO) as a Collaborating Centre in Training and Research in District Health Systems.

The course is run in English, it lasts one year and accepts 24 participants from Africa, Asia, Latin America and Italy.

During the first semester the participants are expected to acquire the knowledge, skills and attitudes needed to become effective district health managers; the training relies mainly on problem-based learning (De Virgilio, 1993). The second semester is devoted to applied

Requests for reprints should be sent to G. De Virgilio, ICHM Didactics Co-ordinator, Istituto Superiore di Sanità, Aula Missiroli, Viale Regina Elena 299, 00161 Roma, Italy.

research assignments in various countries (from Brazil to Uganda to Nepal); it represents real life application of what was previously learnt in simulations.

This paper concentrates on describing how training takes place in the second semester Fieldwork Module of ICHM.

The Learning Objectives

Fieldwork is the component that emphasizes the ICHM "community-based" philosophy by allowing exposure to, and exchange with the community and the health care providers. The main aim is to provide the participants with a practical experience in which they apply the knowledge, skills and attitudes acquired during the residential component of their training.

This applied research assignment provides a first hand experience in major managerial issues such as: planning, budgeting, managing financial resources, selecting and training personnel (often as interviewers or facilitators for focus groups), interacting with authorities and the community, and using specific informatics tools (such as EPI INFO).

The learning objectives of the Fieldwork Module are set out in Table I.

Table I. Learning objectives of the fieldwork module, ICHM 1993

At the end of this module participants will be able to:

1. Design, implement and present an applied research plan relevant to PHC management:

1.1. prepare a written Field Work Report with due emphasis and relevance to such issues as discussion, conclusions and recommendations ;

1.2. negotiate with local counterparts for project identification, definition and implementation;

1.3. prepare an appropriate study design;

1.4. identify and make appropriate use of resource persons relevant to the achievement of the study objectives;

1.5. practise, evaluate and refine oral presentation skills;

1.6. practise, evaluate and refine writing techniques; and

1.7. practise, evaluate and refine group dynamics skills.

Implementation

Organising the fieldwork (Table II) is the responsibility of the course management and the participants, who work in groups of three.

The course management makes the initial contacts with the host governments, Ministries of Health, Italian embassies and other national and international agencies as appropriate for each field station. Through these contacts a field study topic is identified, and agreement is reached on the logistics and the technical support that will be provided in the field. A staff member with disciplinary experience in the relevant study area is assigned as a field tutor to each group. S/he will assist the trainees during this module, including a maximum of 3 weeks at the field site.

The course management provides each group with equipment (a camera and film, a tape-recorder with cassettes, a portable computer, printer, and software), return air tickets and a per-diem while in the field. Other expenditures, such as training and short-term employment of translators/interviewers, have to be justified by the study design and are covered by the management if deemed relevant and necessary.

Secretarial support from ICHM staff entails assistance in Rome for data entry counter-checking, editing, typing and formatting preliminary reports, supervising the collection of receipts needed for reimbursement of expenses, providing technical support in the use of portable computers (hardware and software maintenance) and, in certain cases, linguistic support in the preparation of documents where the language is not English. A spot visit may also be planned, when needed.

Table II. The time schedule for the fieldwork module, ICHM 1993

Date	Activity	Duration (working days)
30/6-26/7	Field work preparation (Rome)	19
27/7-8/8	Days off & departures for field	13
9/8-15/10	Work on site	10
18/10-3/12	Writing Final Report (Rome)	34
3-16/12	Assessment activities	6
16/12	Final Course Evaluation, Awarding of Certificates and Closing ceremony	

During the preparation phase in Rome, each group is required to prepare a preliminary study design based on available information and to submit it to the tutor before leaving for the field.

In collaboration with the local counterpart(s) the group finalizes the study design. This includes identifying its specific objectives, stating how these will be reached (methods and instruments) and by when (timetable of activities), what indicators will be used for their achievement, and what monitoring procedures will be used.

Implementation follows. Preliminary results of the study are then discussed with the local counterpart, with emphasis on assessing the appropriateness and feasibility of the eventual analytical work to be carried out in Rome.

A preliminary report is left at the field site.

The last phase of report writing begins with an informal oral presentation by each group. The main aim is to share experiences and gather advice prior to completing the data analysis.

The group finalises the analysis and interpretation of the data collected in the field and prepares a final report. This is submitted in written form, presented and discussed orally with internal and external assessors.

Links with Problem-Based Learning (PBL)

The learning method adopted in the field semester is related to the residential semester with PBL. The "problem" is now represented by a real managerial issue that hampers the proper implementation of primary health care at district level. Its relevance is strengthened by the fact that the "problem" is identified by the local management team and not by the researchers whose task it is to first clarify the nature of the "problem" with the local counterpart (*problem definition*).

The training of the first semester enables the researchers to systematize the issues within a conceptual framework (*hypotheses related to underlying causes of the problem*). After exchanging group experiences the participants define the research objectives and, consequently, their learning objectives.

The Tutor acts as a Facilitator in so far as s/he guides the participants through the process of the module. S/he is the main resource person, well acquainted with the subject of the study, and acts as assessor of individual performances (*assessment by tutor*). Much of the PBL approach is, therefore, maintained. The difference is that the environment is real and not simulated.

The impression of the staff is that participants have acquired sufficient knowledge and skills in programme management issues and methods. One reason for choosing a "guided discovery" approach in PBL was that it was intended to produce such a result. Possibly more important is the acquisition of an appropriate method of work; the tutor comes to recognize that working with the participant team is very similar to working with a colleague.

As in semester one, some teaching/learning opportunities use a more traditional approach; they are named Non-PBL sessions. These relate mainly to epidemiology, biostatistics and informatics, such as study design, survey and sampling methods, case-control and cohort study methods, sample size determination, questionnaire and analytical plan development, rapid appraisal techniques, use of portable DOS-based computers for questionnaire design, data entry, data analysis, and word processing.

Areas for Investigation

Topics under investigation may range from assessment of managerial problems to survey of consumer satisfaction, community perception of illness and community awareness stimulation in preparedness for epidemics. They all focus on the search for rapid, relevant and appropriate solutions to operational problems that hamper the full implementation of Primary Health Care services. The institutional aim of the course dictates that research is conducted in community settings. The fieldwork is therefore relevant to the participants' future task and stimulates the local management to adopt a community-based approach in the provision of health care. It is a way towards the development of a new professional dimension in which the doctor's primary duty is to satisfy the population's needs by providing appropriate, relevant and equitable services. In this context PBL is seen not just as a more efficient approach to training doctors for traditional roles, but rather as an opportunity to revise drastically the objectives of medical schools.

Assessment

The fieldwork is assessed for process and outcome, and with attention to individual and group results.

Process: Assessing individual performance

The Tutor is responsible for assessing the individual performance in aspects of process taking into account the following criteria:

- group cohesiveness and cooperation;
- quality of individual contribution;
- appropriate time management;
- appropriate management of material and financial resources;
- appropriate consideration and use of human resources;
- cooperation with local counterpart;
- initiative in dealing with problems.

Formative feed-back is given at the end of the tutor's visit, and certifying assessment is carried out at the end of the fieldwork module.

Outcome: Final Report and Presentation

The Final Report (including the original Study Design) is marked by two internal staff who were not involved as tutors. The assessment criteria on which they base their comments are presented in Table III. This is the only occasion in the Course where a group mark is assigned.

A final oral presentation is given to a panel of evaluators: two external staff are asked to consider content areas such as-completeness (with respect to the written report), logical sequence of issues presented, and the ability to discuss specific issues in depth. These external evaluators are often professionals from the WHO headquarters and international public health schools (e.g. The Royal Tropical Institute, KIT, Amsterdam). Presentation skills are also assessed at this point by an internal member of the staff based on the same criteria that were used in previous modules. Table IV summarises the assessment tools, assignments and their relative weight.

Table III. Criteria for assessing the fieldwork final report, ICHM 1993

With respect to study design

- clarity and coherence of goals and objectives;
- coherence and feasibility of planned activities;
- appropriateness of methods selected for data collection and analysis;
- quality of discussion on issues of feasibility;
- quality of plan for monitoring.

With respect to the final report

- relevance and clarity of executive summary;
- depth and coherence of the rationale for the study;
- achievement of the objectives as stated in the study design;
- clarity of presentation of results;
- quality and coherence of interpretation;
- appropriateness, relevance and feasibility of the operational recommendations;
- completeness and correct reporting of references.

Problems and Tentative Solutions

Training for applied research through PBL

In the first years of the Course, participants were left almost completely free to design and implement the fieldwork research. The staff who were assigned to assist them maintained the "facilitator" role: no input on content. While the final products were of a reasonable quality, the process was somehow uneasy and artificial. How could the staff member as a professional not work "with" the team? Would that mean a decrease of the participants' independence of thought and decision-making? It was soon realised that active and full collaboration by the staff would shape the exercise into a more professional experience; there would still be room for independence of action and decision-making. Fieldwork could relate to wider research of the staff, and the researcher would become the appropriate "tutor" for the field team. Staff and participants enjoyed this new approach which was introduced in 1991, and the quality of the process and output improved considerably.

Table IV: Tools, assessors and weighting

Tools	**Evaluators**	**Score**
Tutor Written Assessment	Tutor	10/50
Final Report	Internal Staff	30/50
Oral Presentation		
(presentation skills)	Internal Staff	5/50
Oral Presentation (content)	External Staff	5/50

Ambitious expectations of the research
It is sometimes difficult for the tutor of a group to adjust the level of complexity to the available human resources. Although drafts of study design were to be reviewed to avoid such problems, the discussion and revision of seven to eight such papers is a difficult exercise. The problem has almost been resolved through the experience which tutors have acquired with time.

External assessors
The involvement of external assessors in the final assessment of the report is a healthy undertaking; qualified professionals come into close contact with the Course and contribute much to its development. The participants are exposed to visiting staff and may assess their own ability to present and discuss their findings and recommendations. Some logistic difficulties have been experienced in providing the visitors in advance with written material on the studies to be assessed. The format for conducting their assessment has also been questioned. Through the external assessors' suggestions, participants' evaluation, and comments from the ICHM external adviser on the assessment system (Jolly, 1993) a new scheme was implemented in 1993.

The external evaluators now attend the oral presentation of the field report, observe and actively participate (with specific questions to each participant) in the feed-back given by the internal staff.

Change of field-station
The quality of the whole exercise is positively influenced by continuity of work at the same site; three years represent a satisfactory period. Some unavoidable events such as war, have sometimes affected this important aspect.

Allocation of individuals to teams

To match 24 participants and 8 staff in four-research teams is a considerable managerial exercise. The course technical director is ultimately responsible for allocation to teams after consulting with the participants and the staff in an attempt to accomodate individual preferences. The director must also consider linguistic skills (field stations are scattered in English, French, Portuguese and Spanish speaking countries).

Conclusions

A public health community-oriented course with PBL as its instructional method should consider how to adapt this approach for training experiences in the field. The real life environment offers the participants the sort of opportunity that medical schools can provide when they pass from "paper cases" to real patients in preparing their students for their future professional life. This paper describes how such a transition is managed by ICHM. From a wider perspective it is possible to conceive an ideal progression from the training phase in a simulation environment (PBL as an educational tool), to the training phase in the field (PBL as a working approach) and on to what follows, namely the return of participants to their own professional responsibilities (PBL as a professional and a continuing education tool).

References

De Virgilio, G. (1993). Problem-based learning for training primary health care managers in developing countries. *Medical Education, 27,* 266 - 273.

ICHM. (1993). Course Year Book. (ICHM course materials).

Jolly, B. (1993). *Report on the assessment system of the International Course for Primary Health Care Managers* (unpublished paper).

Annals of Community-Oriented Education
1994, Vol. 7, 211-217

Educational Activities of the Royal Australasian College of Physicians

N. Paget, P. Johnston, S. Gilbertson, J. Du and M. Faithfull
Royal Australian College of Physicians
Sydney, Australia

Abstract

This paper outlines the principal educational activities within the Royal Australasian College of Physicians. It includes particular reference to the changes in process to enable the College to meet its future educational needs adequately within a rapidly changing context of patient care.

Introduction

The Royal Australasian College of Physicians (RACP) represents almost 6,000 specialist physicians in Australia, New Zealand and overseas covering nineteen sub-specialties of internal medicine. In addition, the College has three Faculties with a further 1000 Fellows, covering the disciplines of Public Health Medicine, Occupational Medicine and Rehabilitation Medicine. It operates in close liaison with the Australian College of Paediatrics and the Paediatric Society of New Zealand with whom it shares some activities, including examinations and continuing medical education. It is also closely involved with nineteen Special Societies which represent the interests of physicians in clinical subspecialties. RACP activities additionally include provision for the education of some 800 trainees.

The affairs of the College are conducted by the Council, its committees and its staff under a Mission Statement and Strategic Plan. The Mission Statement includes:

> "Fellows of the College conduct a rigorous and extensive system of supervised training and examination and participate in continuing medical education. In order to ensure the optimal care of the people of Australia and New Zealand, Fellows insist on the achievement and maintenance of the highest standards of professional competence and ethical behaviour."

The principal educational areas are under the direction of: the Board of Censors for training and examinations and the Board of Continuing Education for the maintenance of competence. These Boards are serviced and supported by a range of specific committees and working parties and by the permanent staff employed within the College. Included in these activities are the nineteen Specialist Societies which represent the interests of the

---

Requests for reprints should be sent to N. Paget, Directorate of Education, Royal Australian College of Physicians, 145 Macquarie Street, Sydney, N.S.W. 2000, Australia.

major subspecialties within the College. All Fellows who sit on the College Council, Boards and Committees do so in a voluntary capacity.

The Chief Executive Officer is responsible for the implementation of the policies and decisions of Council and for the supervision of staff. The majority of the sixty permanent staff are administrative officers, although the College also houses a History of Medicine Library and has five academic staff in its Directorate of Education. The Director of Education attends all meetings of the two Boards and their Committees.

The Royal Australasian College of Physicians differs in several significant respects from other Colleges of Medicine, both overseas and in Australasia. It is unusual in being a single specialist College which contains within it the full range of sub-specialties for both internal medicine and paediatrics, as well as three Faculties with differing yet overlapping areas of specialisation. In addition, it spans two countries with diverse political, economic and social structures, and within Australia a variety of federal and state structures make demands on clinical practice. As opposed to Colleges with single specialties, it has no exit examination at the end of the advanced training component of its Fellowship training. It has declared its willingness to provide high quality education by maintaining a Directorate of Education which interacts with the committees of the College and supports the activities provided for trainees and Fellows.

In financial terms, the RACP has an annual turnover of approximately A$3,400,000. Its commitments to educational areas of training, examination, continuing education and maintenance of professional standards accounts for A$1,600,000 (47%) of this budget, and its publications and library take up a further A$500,000 (14%).

Basic and Advanced Training

Requirements for admission as a Fellow of the Royal Australasian College of Physicians are three years basic training, a pass in the written and clinical examinations and three years advanced training. Training cannot commence unless a doctor has at least one year of hospital experience following graduation from an undergraduate medical course.

Basic training is acquired through a posting at one or more selected hospitals. It consists of two years of core training which must be spent at a university teaching hospital and one year of elective training which may be spent in research or in a general hospital. The core training period is carried out under the supervision of a Director of Physician Training who would usually be a Fellow of the College working at that hospital. Basic physician trainees typically rotate through a series of approved medical subspecialty posts.

The role of the College in basic training consists of determining which hospitals are suitable for accreditation as training centres and setting limits on the time allowed to be spent in any one sub-specialty. The major role in basic training is played by the Director of Physician Training and individual trainee supervisors. Throughout basic training, trainees are expected to increase their medical knowledge and improve their clinical skills. The Director of Physician Training is responsible for ensuring that the activities undertaken by the trainee are adequate to achieve these goals. The Director of Physician Training also advises the trainees in their preparations for the FRACP examination and advanced training, and advises the College formally on the content of each trainee's programme.

Assessments of a trainee's skills and knowledge are made during the third year of basic training through written and clinical examinations. At present, a revision of the assessment procedure is being evaluated to include systematic formative assessment during the training period. With this aim, an In-Training Assessment scheme has been initiated and a pilot study is in progress. The exact assessment function of the In-Training Assessment has not been finalized, but it is anticipated that it will benefit trainees by providing them with useful feedback and assist supervisors in forming more accurate judgements about the trainees' progress. It may also contribute to the summative assessment process of formal examinations in the future.

The objectives of basic training are also undergoing revision. Until now, no formal set of detailed objectives has existed; only general guidelines were provided. In the interest of good communication, a full set of objectives has been formulated and is now passing through the final stages of review.

The RACP Examinations

The Committee for Examinations, under the guidance of the Boards of Censors in Australia and New Zealand, is responsible for selecting the appropriate examination format, its administration, analysis of examination results, setting pass marks, and resolving appeals and disagreement over the examination results. There are separate examinations for paediatrics and internal medicine. The Director of Education works closely with the Committee to oversee and improve the objectivity, validity and reliability of the College examinations.

The written examinations may be taken during the third year of the basic training or later. Candidates who pass the written examination are allowed to sit for the clinical examination which is held twice a year. Candidates who fail the clinical examination may resit it on further occasions within the following two years before having to resit the written examination. Both written and clinical examinations are held in major centres in Australia and New Zealand. In 1993, 321 candidates sat the Internal Medicine written examination and 115 the Paediatric written examination. 65 percent of candidates were successful, by resitting on subsequent occasions, 90 percent of all candidates eventually pass the written examination.

In the written examinations there is a progressive change from using multiple true/false type questions to single best answer questions. The latter are more suitable for presenting realistic clinical scenarios and for testing candidates' ability to apply medical knowledge in a clinical context. This format also discriminates well between candidates. The examination consists of a Clinical Applications paper which examines candidates' knowledge in clinical practice and therapeutics and a Medical Sciences paper which examines knowledge of the principles of medicine and basic sciences applicable to clinical medicine.

The clinical examination, which involves one long case and two short cases, have been under constant review. From 1995, the number of cases will be increased to two long cases and four short cases, to allow for better sampling of candidates' clinical performance and to ensure that all candidates have a similar examination experience by seeing patients with similar conditions. Recent clinical examinations have demonstrated a high level of inter-rater reliability. Training and calibrating examiners will continue to maintain the reliability of the examinations. To solve the problem of inference when candidates are only required to describe their findings, as is the current practice, the examination is likely to include some observation of long cases to asses how candidates elicit the information. This will improve the validity of long case examination, as it will also assess areas of communication and interpersonal skills. The same system for clinical examination will be used in paediatrics and internal medicine in both New Zealand and Australia.

Advanced Training

Following success in the written and clinical examinations, a trainee may begin advanced training. The trainee must nominate a field of medicine in which to specialize and contact the College for information on training in this field. The guidelines provided by the College are much more detailed than those for basic training.

Advanced training is divided into yearly blocks. Usually, a minimum of two years will be core training, and one year will be elective training. The core period is carried out under supervision and must include activities that allow trainees to acquire a detailed clinical knowledge of their chosen field. The elective period enables trainees to include some research, laboratory or academic experience in their training. Many Specialist Advisory Committees require written reports and projects from the trainee which must be submitted with the supervisor's report at the end of each year.

The programme for each year must be approved by the relevant Specialist Advisory Committee and, upon successful completion, is credited by the Committee for Physician Training. During the last year of advanced training, the trainee may apply for admission as a Fellow of the College. The Committee for Physician Training will forward the supervisor's reports and its recommendations to the Board of Censors where the decision regarding admission is made. Fellowships are then awarded to successful trainees at the Annual Scientific Meeting.

Maintenance of Professional Standards

The purpose of the Maintenance of Professional Standards (MOPS) programme is to ensure that fellows are involved in a range of on-going educational activities which maintain clinical standards. The introduction of a mandatory system of continuing medical education has been debated since the seventies. In August 1990 the RACP Council conducted a Policy Planning Meeting on continuing education programmes and the possibility of recertification as well as to construct a strategic plan for the following five years. In May 1991, the Council endorsed the recertification principle and established a Recertification Working Party with membership drawn from Australia and New Zealand and representing a wide variety of interests. There was unanimous agreement that recertification should be mandatory for all Fellows in active clinical practice.

A draft programme was presented to the Council in May 1992 and endorsed in principle. The key elements were: cooperative development with Special Societies and other interested parties; emphasis on education and quality assurance activities; development of an appropriate physician assessment process; and the issue of a time-limited Certificate. As this programme is not directly related to the requirements for Fellowship, the certificate will be for satisfactory participation in a Maintenance of Professional Standards programme. In March 1993 the MOPS programme was approved by the RACP Council.

The MOPS programme commenced in January 1994. It is intended that the programme will be introduced over a five year period; twenty per cent of the Fellowship will begin MOPS in 1994 and in each of the subsequent four years. The overall structure of the programme will involve a five-year cycle of active participation in various activities. The programme consists of: **Continuing Medical Education** including relevant clinical or educational meetings, workshops and seminars, learning projects, self-assessment and practice-related educational activities; **Teaching and Research**, including teaching of medical and allied health trainees at undergraduate and postgraduate levels, presentations, research and publications; **Quality Assurance** activities involving the design, implementation, evaluation and follow-up of studies aimed at facilitating improvement in quality of care in conjunction with efficient use of resources. Quality Assurance encourages the examination of quantitative data (procedures, outcomes, errors or clinical indicators) which reflect the quality of care given by a physician. A Quality Assurance Sub-Committee was established in June 1993. A form of Physician Assessment will also be introduced to gain ratings from peers on a range of professional and personal attributes in the normal practice setting.

Fellows may request a review of their practice at any time during the five-year cycle as the sole means of satisfying the requirements of MOPS. A Practice Quality Review is a developmental process designed to assist the individual Fellow in maintaining the best possible standards of practice. The practice review will incorporate an evaluation of professional activities including clinical activities and practice management. A practice visit will involve the examination of records, staff and patient perceptions, and also some form of observation of the Fellow with patients. A Practice Quality Review may also be instituted to provide a basis for counselling Fellows who have not satisfied MOPS requirements.

Various aspects of the MOPS programme have been evaluated, and others are being refined in preparation for the introduction of 20 percent of the Fellowship to the MOPS programme at the beginning of 1994. The first pilot programme of the Physician Assessment has been completed, and a second larger trial commenced in May 1993. The purpose of these trials is to ascertain the validity, acceptability, feasibility and reliability of incorporating a Physician Assessment component into the MOPS programme. At the same time the Practice Quality Review is being evaluated. A Practice Profile trial with 220 Fellows was begun in September 1993. The principal purpose is to encourage Fellows to document their professional and personal activities, so that they may reflect on what they are actually doing in their practice with a view to planning ongoing involvement in continuing medical education, quality assurance and scholarly pursuits.

Services for RACP Fellows

A physician's continuing medical education activities will generally include scientific reading, attendance at conferences and participation in workshops and seminars. The College supports these activities in a variety of ways. At the Annual Scientific Meeting physicians from Australasia can exchange ideas from both specialist and general areas of medicine. The range of activities includes scientific presentations, lectures and workshops.

The major RACP publications are the *Australian and New Zealand Journal of Medicine* published six times a year with a circulation list of 6,000, and *Fellowship Affairs* published quarterly with a circulation of 7,000.

The College supports meetings of the specialist societies. The Research Advisory Committee administers a large number of scholarships and grants for research which are generally available to both Fellows and advanced trainees.

The RACP History of Medicine Library provides a unique resource to its Fellows and trainees with a collection of more than 30,000 books and periodicals, as well as pamphlets, photographs and manuscripts. In Australia this is the only library totally devoted to the history of medicine.

The RACP maintains excellent relationships with postgraduate professional medical organisations throughout Australasia and other parts of the world, especially those in Asia, Great Britain, United States of America, and Canada.

Conclusion

In the past two or three years in particular, there has been an expanding interest in both the range and quality of the educational activities. In part this can be explained by the decision to introduce the Maintenance of Professional Standards programme, but it is also the result of the RACP continually monitoring and evaluating its full range of activities. The College has made a major commitment to increasing the quality of its educational activities through the establishment of a Directorate of Education which now provides Fellows of the College with professional assistance in all relevant medical education issues.

There have been large increases in the number of trainees in recent years, accelerating the need for the College to maintain adequate databases. Interactive services will become available to Fellows. It is anticipated that this will enable them to access the medical literature internationally from their own practices, to provide returns to the College electronically, and to participate in self-assessment activities interactively. These options will assist the College's geographically diverse specialists to maintain the highest level of patient care into the 21st Century.

The RACP is addressing a wide range of issues in order to ensure that its activities are of the highest possible educational value, and that trainees and Fellows are able to benefit effectively.

Annals of Community-Oriented Education
1994, Vol. 7, 219-224

Teaching Medical Interns the Effects of Values and Prejudices on the Doctor-Patient Relationship

F. Saçaklioglu and N. Bakirci
Ege University
Izmir, Turkey

Abstract

In order to evaluate the effect of personal values, biases and prejudices in the doctor-patient relationship, the main aim of the study was to make the interns aware of their own prejudices and biases. Interns were asked to rate video-taped patients in terms of positive and negative characteristics. Preference showed that the interns preferred the patient who seemed most cooperative. The ratings of the rural woman revealed a classic social bias. However, this group of interns did not seem to embrace the common stereotype that beautiful is good.

Introduction

Despite their readiness to admit to negative feelings or attitudes about patients, most physicians believe that they treat all patients equally well and impartially. Few are prepared to believe that their feelings get expressed in any negative professional behaviour which would affect patient care. The discrepancy between personal values and professional behaviour may arise because the physician is unaware that personal, perhaps even subconscious values can influence quality of care.

The aim of this study is to explore personal values, biases and prejudices of interns in the doctor-patient relationship. This research is the first step in the evaluation of educational material on the doctor-patient relationship. The authors are planning to make different video tapes to approach the doctor-patient relationship form different points of view.

Material and Method

A pilot study was designed around the Australian study which demonstrated that beautiful patients are viewed by physicians as good patients.

The survey involved a series of vignettes depicting five patients interacting with the same doctor in five scenarios on the doctor-patient relationship. The roles were played by amateurs. Each patient with the same signs and symptoms, disuria, was interviewed by the same physician actor whose behaviour and manner of questioning was standardised as much as possible for all patients. The patients differed from each other in sex, age, social status, occupation and physical attractiveness. A common stereotype was incorporated

---

Requests for reprints should be sent to F. Saçaklioglu, Ege University, Faculty of Medicine, Department of Public Health, 35100 Bornova, Izmir, Turkey.

into each of the patients, including incongruous stereotypes. The characters of the patients were as follows:

1. Young, beautiful woman. She is rich, is not working. Behaves superiorly with the doctor. She is not informative about her illness.
2. Young male worker. He is poor, of eastern origin with appropriate dialect. He is very shy but informative about his illness.
3. Old woman. She is a retired teacher, very warm, open and honest. She is a reliable source of information about her illness.
4. Young, beautiful woman. She is a worker of rural origin and dialect. She has little self-confidence, is poor and shy. She is informative about her illness.
5. Middle-aged male lawyer. He is an active person, intelligent and articulate. He is overworked. He does not give details about his illness.

These vignettes were shown to the interns during their rural internship period, and the results were discussed with them. The sample size was 89. 33% of the interns were female, while 67% were male. The interns were invited to watch the videos in small groups, approximately 15 in each group. The video tapes of the five doctor-patient relationships were shown at the beginning, immediately after a short explanation about the study. On a rating form interns were asked to rate each patient on ten positive and ten negative characteristics (Table I). In order to make the ratings of each patient easier, a second showing was arranged, when they watched and rated each doctor-patient relationship separately.

At the same time interns were asked to identify the best characteristic which best described each patient. After all patients were rated, interns selected the patient they would most like to treat if they were a physician. While the completed rating forms were still in their hands, a group discussion was held, in order to make them aware of their own values, prejudices and stereotypings, and thus to learn how to interact non-judgementally with patients.

Results

The most striking feature was that the third patient, the old woman, had a high rating on almost all the positive characteristics, except for attractiveness, and was perceived as having essentially no negative characteristics, except for being manipulative. These data were supported by the interns' patient preference. The majority of the interns (67.0%) identified this patient as the one they would most like to treat (Table II).

The first patient, a young, beautiful and rich woman, had moderately low positive ratings, while her negative ratings were the highest of all the patients. Although she was beautiful, her behaviour made her unattractive and unbearable. During the discussion sessions the majority of the interns stated that until she started to talk she seemed attractive but then she became unbearable and as she was a complainer and did not trust the physician, they would prefer not to deal with such a patient. This group of interns seemed not to embrace the common stereotype that beautiful is good.

Table I. Checklist for rating video-taped patients

Positive characteristics

1. Will cooperate with treatment
3. Needed to see a doctor
5. Makes eye contact
6. Is open and honest
8. Is intelligent
10. Understands the doctor's diagnosis
13. Is attractive
14. Is friendly
17. Is a reliable source of information about his/her illness
19. Is warm

Negative characteristics

2. Does not trust the physician
4. Probably has other health problems
7. Is rigid
9. Is manipulative
11. Has a whining tone of voice
12. Is dependent
15. Is fidgety
16. Probably needs psychological help
18. Is a complainer
20. Exhibits non-verbal cues which are inconsistent with verbal ones

The second patient, a young male worker had high positive ratings in terms of need to see a doctor, cooperative with the treatment and reliable as a source of information about his illness. That he was not rated attractive and warm might be due to the fact that he was shy and did not establish eye contact with the physician. He received some high negative ratings such as being manipulative, fidgety and dependent.

Table II. Interns' positive and negative ratings

	Patients				
	I	II	III	IV	V
	Percentage				
Positive ratings					
* Will cooperate with treatment	28.1	80.9	100.0	39.8	71.6
* Needed to see a doctor	62.9	97.8	94.3	87.5	61.4
* Establishes eye contact	67.4	40.9	92.0	0.0	96.6
* Is open and honest	9.0	84.1	97.7	26.1	62.5
* Is intelligent	39.3	27.3	89.8	3.4	88.6
* Understands the doctor's diagnosis	55.1	35.2	93.2	5.7	78.4
* Is attractive	40.4	9.1	29.5	6.8	38.6
* Is friendly	12.4	55.7	96.6	26.1	85.2
* Is a reliable source of information about his/her illness	32.6	80.7	96.6	33.0	59.1
* Is warm	16.9	40.9	92.0	19.3	81.8
Negative ratings					
* Does not trust the physician	78.7	10.1	4.5	21.6	15.9
* Probably has other health problems	59.6	30.3	20.5	55.7	20.5
* Is rigid	71.9	13.6	2.3	25.0	8.0
* Is manipulative	7.9	81.8	56.8	83.0	17.0
* Has a whining tone of voice	77.5	17.0	1.1	10.2	1.1
* Is dependent	20.2	42.0	10.2	81.8	3.4
* Is fidgety	84.3	62.5	4.5	71.6	10.2
* Probably needs psychological help	69.7	23.9	3.4	51.1	8.0
* Is a complainer	85.4	4.5	3.4	31.8	3.4
* Exhibits nonverbal cues which are inconsistent with verbal cues	73.0	2.3	5.7	19.3	43.2

The ratings of the fourth patient revealed more classical social biases. The only high, positive rating for her was a need to see a doctor. Apart from this she received the least positive ratings for intelligence, understanding of the doctor's diagnosis, and attractiveness. Although she was informative about her illness, the interns did not rate her so. She was rated as manipulative, dependent and fidgety. This accorded with discrimination between urban and rural (especially eastern-rural) people.

The patient received high positive and low negative ratings. The only high, negative rating was exhibition of non-verbal cues inconsistent with verbal ones. This patient was not informative about his illness, but the interns rated him as the person they most liked and found friendly. Apart from being a patient they saw him as a friend. In general that patient was not seen as a patient at all.

The interns were next asked to choose the single characteristic that best described each patient in turn (Table III).

BEST COPY AVAILABLE

Table III. Single characteristic that best described each patient as perceived by the interns (%), N=89

Characteristics	Patients I	 II	 III	 IV	 V
			Percentage		
* Will cooperate with treatment	-	-	17.2	-	-
* Does not trust the physician	9.2	-	-	3.4	2.3
* Needed to see a doctor	1.1	25.3	4.6	6.9	1.1
* Probably has other health problems	2.3	1.1	-	4.6	1.1
* Establishes eye contact	1.1	-	1.1	1.1	3.4
* Is open and honest	1.1	12.6	16.1	2.3	4.6
* Is rigid	5.7	2.3	-	3.4	-
* Is intelligent	-	-	11.5	-	26.4
* Is manipulative	-	17.2	4.6	13.4	1.1
* Understands the doctor's diagnosis	1.1	-	3.4	-	3.4
* Has a whining tone of voice	8.0	-	-	1.1	-
* Is dependent	2.3	6.9	1.1	35.6	-
* Is attractive	1.1	-	2.3	-	-
* Is friendly	-	3.4	19.5	1.1	17.2
* Is fidgety	11.5	11.5	-	16.1	2.3
* Probably needs psychological help	16.1	4.6	1.1	4.6	1.1
* Is a reliable source of information about his/her illness	-	13.8	10.3	-	3.4
* Is a complainer	27.6	-	-	4.6	-
* Is warm	-	1.1	6.9	-	17.2
* Exhibits nonverbal cues which are inconsistent with verbal cues	11.5	-	-	1.1	13.8

Patient I (Table III) was rated as a complainer (27.6%), patient II as needing to see a doctor (25.3%), patient III as a friendly person (19.5%), patient IV as a dependent person (35.6%), and patient V as an intelligent person (26.4%).

The final question on the rating form asked the interns to identify the patient they would most like to treat (Table IV).

Table IV. The patient interns would most like to treat

Patient III	67.0 %
Patient II	17.0 %
Patient V	11.4 %
Patient I	2.3 %
Patient IV	2.3 %

The majority of the interns would prefer to treat patient III (67.0%). Their main motivation was that this patient was most likely to comply with treatment. Although patient II was rated as most in need of seeing a doctor he was not chosen as the patient interns would most

BEST COPY AVAILABLE

like to treat.

Other reasons for reject as preferred on patient were: does not trust the physician (patient I- 78.7%), does not understand the doctor's diagnosis (Patient IV- 94.3%), will not cooperate with treatment (Patients I and IV 71.9% and 60.2% respectively).

Discussion

While the interns did not feel confident in their competence, they preferred the patients who were more informative about their illness, who would comply with their treatment and who would not behave superior to them. The interns preferred the patient who was most likely to benefit from their treatment.

Some subconscious values or prejudices may affect the interns' perceptions. The most striking example was Patient IV. Although she was rated as needing to see a doctor and was informative about her illness, she was not chosen (only 2.3% chose her). Because of marked urbanisation there is a rapid social transition in Turkey. Within this process the values of society are also changing. There is general conflict between urban and rural perceptions. The common view is that what is urban is good, what is rural is bad. For that reason the underlying cause might be her rural background.

Conclusion

Physicians, as well as other people may have biases and prejudices. The most difficult thing is to realise and accept that such values may affect our behaviour. An understanding of how personal values and unconscious stereotypes can affect behaviour is crucial, if our behaviour is to be congruent with our value system. This understanding is not easily achieved without assistance from others. Sometimes experiences make overt the incongruity between values and behaviour. The purpose of these vignettes and this research was to demonstrate the hidden values of practising physicians and that the interns could have biases and prejudices which might affect their behaviour with patients. The main aim of the researchers was to include the doctor-patient relationship as a topic in the medical curriculum. It is the aim of the authors to discuss with the students "What is the doctor-patient relationship?" and to show that certain philosophical preconceptions associated with the notions of "disease", "treatment" and "cure" have a profound bearing on both the theory and the practice of medicine. This research is the first step towards that end.

Bibliography

Klein, D., Najman, J., Kohman, A., & Monro, C. (1982). Patient characteristics that elicit negative responses from family physicians. Journal *of Family Practice, 14,* 881-888.

Drucker, E. (1974). Hidden values and health care. *Medical Care, 12,* 266-273.

Kurtz, M.E., Johnson, S.M., Tomlinson, T., & Fiel, N.J. (1985). Teaching medical students the effects of values and stereotyping on the doctor-patient relationship. *Social Science and Medicine, 21,* 1043-1047.

Szasz, T.S., & Hollender, M.H. (1956). The basic models of the doctor-patient relationship. *Archives in Internal Medicine, 97,* 585-592.

Annals of Community-Oriented Education
1994, Vol. 7, 225-235

Continuing Education in Primary Care: Development and Implementation of a Province-Wide On-Site Programme

Charles P. Leduc and Yves St-Arnaud
University of Sherbrooke
Sherbrooke, Quebec, Canada

Abstract

The Province of Québec, Canada, has implemented since 1970 a network of 157 Local Centres of Community Services (CLSC) which provide primary health care and social services to the entire population. Twenty years of evolution have generated the necessity of creating a continuing education programme for the workers in the CLSC. The Federation of CLSC identified this need and asked the Université de Sherbrooke to participate in preparing a programme. One of the first steps in devising the university-level certificate was the validation of a prototype structure by CLSC directors and a sample of workers. Sixty-three of 157 directors and 195 of 280 workers responded to questions about course objectives, schedule and acceptability of on-site training. This survey confirmed the relevance of the proposed programme. Following minor adjustments, the first CLSC have signed contracts with the University and have participated in the first sessions. The programme is in its second year of implementation, and the objectives of providing an on the job, on-site programme that is attuned to local priorities are being reached. For the University, this unique programme permits the definition of a new line of theoretical development and research in primary care and at the same time contributes to the improvement of practice in this field through continuing education.

Introduction

Primary care is not yet the subject of specific university-level education in most countries. In Québec, Canada, primary care is provided by professionals of many disciplines: social work, nursing, family medicine, etc. Changes in the health and social care systems and in the needs of the population have to be addressed by a continuing education programme that is targeted to these workers. The development and implementation of such a programme is reported. First, the history of Local Centres of Community Services (Centres Locaux de Services Communautaires, "CLSC") and a portrait of their personnel is given. The initiation of the programme is described, followed by the development of the content and structure. Finally, the mechanisms of implementation and management are described.

History of the CLSC

The 157 CLSC in the province of Québec provide primary health care and social services

Requests for reprints should be sent to C.P. Leduc, Université de Sherbrooke, Réseau CLSC-PLUS, 3001, 12^e Avenue Nord, Sherbrooke, Québec, Canada J1H 5N4.

for the entire population of the province. The first CLSC were founded in 1972, the latest in 1990. Their budget of around $CAN 600 million represents about 6 percent of the total health care expenditure of the Province. Initially these centres were to provide only primary health care. One objective was to control the rising costs of health care by developing a strong primary health care system. At the same time local communities were implementing their own clinics with salaried physicians in medically underserved areas, which "fee for service" physicians avoided. This model of physician payment was incorporated in the proposed provincial centres. Up to now, medical practice in the CLSC remains different from fee-for-service practice (Battista and Spitzer, 1983; Pineault et al., 1991). The government then added the provision of primary social services to the mandate of the centres.

The new CLSC were given their own administrative board composed of a majority local representatives and complemented by CLSC and other institutional delegates. The following years showed a very wide spectrum of what comprised primary community services, as each centre tried to deal with their local priorities. With the maturation of the network of CLSC came the increasing reliance on interdisciplinary work and identification of effective primary care services. The finest example of this process is the development of home care and support for the elderly at risk of losing their autonomy. Recently a common set of programmes was recommended for all CLSC: primary health care and social services, home care and support, a distinct programme respectively for mental health, family and child, youth, and one other as defined by local priorities.

The characteristics of the CLSC have been summarised by Bélanger (1992): orientation towards individual and community autonomy, global approach, real population participation, connection between health care and social services, community approach, interdisciplinary work, CLSC-adapted medical practice, disease prevention culture, and real local autonomy. The future will be characterised by the necessity to balance the development of services and budgetary constraints, preventive and curative care, individual and collective interventions, and national health objectives, and local priorities.

CLSC Personnel

In 1990-91 there were approximately 15,162 people working in the CLSC of the province, to which can be added 1,019 physicians (MSSS, 1993). The latter are not employees *per se* of the CLSC; their salaries are paid by the provincial health insurance agency. Including the physicians, 73,2%, almost 12,000 workers, are providing health care and social services. In terms of full-time equivalents (FTE, one person working a 35-hour week), the numbers are 7,655 FTE for non-physicians and 686 for the physicians (FCLSCQ, 1993). The provincial distribution of primary care workers is given in Table I which also provides an example of the local variation in personnel for the CLSC "SOC" in Sherbrooke (Compagnat, 1993). This CLSC provides care for an urban and semi-rural population

Table I. Distribution of health and social care workers and case load for CLSC "SOC", Sherbrooke 1991-92

Staff Category	**Provincial Average per C.L.S.C. FTE**[1]	**C.L.S.C. "SOC" Sherbrooke FTE**[1]	**Number of persons encountered**	**Average Number of Interventions**
Physicians	4.4	12.5	7229	2.8
School and other nurses	10.9	11.7	2868	7.2
Visiting nurses	5.2	5.8	980	9.5
Dieticians	0.45	-	-	-
Dentists	0.14	-	-	-
Dental hygienists	1.3	2.0	ND[2]	ND[2]
Laboratory technicians	0.32	-	-	-
Occupational health technicians	0.77	3.2	ND[2]	ND[2]
Occupational/physical therapists	0.94	-	-	-
Health others	1.8	6.5	ND[2]	ND[2]
Health care Sub-total	26.2	41.7	-	-
Home assistants	9.1	10.4	394	14.2
Social workers	9.9	17.0	2745	7.1
Psychologists	0.86	-	-	-
Community workers	2.2	7.0	(2,261)[3]	ND[2]
Social others	0.44	5.3	-	-
Social services Sub total	22.5	39.7	-	-
Total	48.7	81.4	13,924	4.7

(Data combined from FCLSCQ, 1993; MSSS, 1993; Compagnat, 1993)

[1] FTE: Full-time work equivalent (one person working a 35-hour week)

[2] ND: No data available

[3] Via 314 group meetings

Table II. Age distribution of the population of CLSC "SOC" territory, Sherbrooke region

Age	Number	%
0 - 9	8,658	11.8
10 - 19	9,591	13.0
20 - 29	11,720	16.0
30 - 39	13,568	18.5
40 - 49	11,110	15.1
50 - 59	7,342	10.0
60 - 69	5,699	7.8
70+	5,733	7.8
Total	73,421	100.0

(Data from Compagnat, 1993)

Initiation of the Project

Point of view of the CLSC

After twenty years of development and growth, an opportunity to define the specific work carried out in the CLSC and the necessity to implement continuing education for the growing number of workers became evident. It was also clear that the discipline-specific training received in colleges and universities did not prepare CLSC workers for interdisciplinary primary care work. Sporadic and local training programmes for specific CLSC-related skills and knowledge were provided. However, what was lacking was a clear definition of what is specific to CLSC work and the need for an integrated long term approach to continuing education in this primary care setting.

In May 1990, the Federation of CLSC decided to study the possibility of developing a university-level continuing education programme for its workers.
In August 1990, the provincial Federation of CLSC started discussions with the Faculté des Lettres et Sciences Humaines, Université de Sherbrooke, responsible for the training of social workers, psycho-educators and psychologists, and withthe Faculté de Médecine, responsible for the training of graduate nurses and family physicians, with a view to developing an interdisciplinary university-level continuing education programme for CLSC workers. The response to this initiative was the appointment of a task force composed of representatives of the two University faculties and the Federation.

Needs for Continuing Education

The analysis of the needs for continuing education was structured around the following four factors.

1. *Objectives and aims of the CLSC.* All the professionals involved in providing primary health care were trained in a specific discipline, and no university or college offered training or continuing education in primary care at that time.
2. *Integration of workers coming from other institutions.* Changing the specialised training of students could have been a solution to the special needs of the CLSC. However, the influx of workers into the CLSC does not depend primarily on new university or college graduates but on transfer from other health care settings. These transfers are consecutive to major changes in the health care and social services network with an emphasis on developing primary care services. Integration of these workers, with the need of rapidly acquiring the skills to provide primary care, created a problem not adequately solved by providing sporadic, piece-meal continuing education programmes.
3. *Evolution and change of the concept and perception of health.* During the first years of the CLSC, health was considered a perfect balance between biological, psychological and social factors. Since then, a more ecological definition supporting the adaptive capabilities of people has replaced the previous utopian concept. The analysis of the interaction between health determinants in the life of a person thus became a necessary primary care skill. Working with such a dynamic process necessitated the development of new, non-discipline-specific, knowledge and skills (Shannon, 1989).
4. *Evolution of health problems and population groups using the CLSC.* Primary care had to change. The economic recession and changes in the social climate in the community prompted a shift in the health priorities of communities. Home care of the elderly has become a major aspect of primary care, and the workload is becoming heavier with the emphasis on avoiding hospitalisation. Almost 16% of the population is over 60 years old (Table II). The younger generation faces unemployment, drug abuse, violence and sexually transmitted diseases. Mental health problems are gaining in importance, and specific problems are associated with multiculturalism. Improvement of primary care has to be effected through the continuing education of professionals that were not trained to manage health problems that were unknown even during their school days.

No CLSC worker is expected to become a specialist in juvenile delinquency or drug use. However, they should be able to consider the global picture presented by a person, use existing natural and community resources, facilitate the development of persons and their social support network (Kellner,1985), intervene during a crisis, and deal with problems in a short timespan. The definite need for interdisciplinary continuing education for primary care workers in the CLSC led to the development of a study programme in March 1991.

Development of the Study Programme

Objectives, structures and content

The characteristics of the programme are:

"on the job" continuing education during part-time studies at their place of work to avoid absence from work; practical training to improve appropriateness and effectiveness of interventions, building on the experience of the participants; by reaching a large number of CLSC workers, the programme will of necessity transmit a set of primary care norms. However, this normative aspect will be balanced by adaptation to local priorities; the CLSC itself will be involved in the training programme and thus make the programme one element of institutional change and evolution; and local expertise will be sought to adjust the programme to local characteristics.

The structure of the certificate and the course content respond to three levels of needs: The needs of the provincial network of CLSC to establish a general model of primary care in the CLSC setting; the needs of the CLSC itself to provide a structured and integrated study programme for the development of its personnel; the needs of each worker to gain knowledge of new methods and to understand the evolution of local health and social problems.

The proposed university certificate is a 30-credit first level undergraduate programme where 1 credit corresponds to 45 hours of educational activities. They include 15 hours of class and 30 hours of self-study. However, a participant need not go through the whole certificate course, and registration for the complete programme is not needed to follow a specific course.

The programme will address five general learning objectives. The student will:

1. develop an understanding of the intervention model specific to the aims of a CLSC;
2. gain knowledge and skills needed for a professional primary care intervention (holistic approach, use of support networks, continuity of care, short term intervention, etc.);
3. improve his or her ability to work effectively in an interdisciplinary team;
4. gain analytical skills for specific community health problems(multiple-problem families, drug use, violence, immigrants, etc.) and the ability of adapting primary care interventions to each case; and
5. acquire self-directed learning and self-evaluation skills.

The initial programme structure was divided in three units, corresponding to:
Unit "A": The foundations of primary care practice.
A prerequisite to all following units; it is an introduction for the whole programme and minimum training for those not pursuing it. Objectives:

1. identify and comprehend the basis of primary care, understand the characteristics of the services provided in a CLSC;
2. identify and learn the specific skills needed in primary care;
3. gain the skills to learn from one's practice.

Unit "B": Thematic activities.
Specific to the CLSC setting, optional activities will be offered from the University, one institution (or a group of CLSC) in answer to a local or regional priority, and from a group of CLSC workers for a specific training need. Four aspects will probably be identified:

problems of specific population groups, methods, analysis and ideological themes, and institutional development.

Unit "C": Personal project.
Students must work, under supervision, on a personal synthesisintegrating new knowledge and their own work. This project must be related to primary care, permit the integration of the objectives of the certificate, be in line with the actual work of the student, and contribute to the knowledge of primary care in the CLSC. For example, after using practice assessment skills, a student may chose the inception of a support group of laid-off textile workers with the objectives of decreasing the incidence of major depression, increasing the probability of finding work again, prevent family conflicts, and becoming more satisfied as a professional. Academic feedback on this one year project will consolidate the knowledge gained.

Validation survey results
This programme was submitted for validation to directors of the CLSC (157) and a randomly selected group of 280 CLSC workers. The survey supported the initial idea of the Federation of CLSC in initiating the development of a university-level programme for the continuing education in primary care of CLSC workers (Table III and IV). Sixty-three directors were more than enough to support the viability of the project as no more than 10 could be accommodated in the first two to three years. These 63 directors were, of course, a self-selected sample of directors, interested in providing a personnel development programme in their CLSC; they were the ones whose views we wanted to have. It is clear that the 100 other CLSC directors were not yet interested in providing institutional support for a longitudinal programme of continuing education. The workers themselves clearly supported the implementation of the programme, although they were not necessarily interested in the 30-credit certificate (Table IV).

Adjustments

Little has changed from the initial project. The first unit has been split in two, separating the basis of primary care as the first course from the following self-learning skills course. The format has also changed. Local arrangements are easier with shorter course spans. All the activities occupy three two-day sessions spread over three months. This arrangement is also much easier for the teachers and still provides time for implementing new concepts in one's practice. It also became clear that the second unit will definitely be prompted by local needs.

Implementation

Academic management

There are four levels of decision-making for the management of the programme. At the highest level, a committee, composed of the president of the Federation of CLSC, the deans of the Faculties involved and the vice-rector for academic affairs of the University, oversees the general orientation of the programme. The University and the Federation are bound by an agreement, whereby the University cannot offer the programme to other institutions, nor can it accept students other than CLSC workers. The Federation, in turn, cannot negotiate a similar programme with another university. This contract will be updated periodically by this committee.

Table III. Results of the validation survey, sample of CLSC directors (N=63)

	Strongly Disagree %	**Disagree %**	**Agree %**	**Strongly Agree %**
The project responds to our personnel development needs	0	3.2	46.0	50.8
The project responds to the perceived needs of workers in my CLSC	0	9.5	65.1	25.4
The objectives of the programme correspond to the continuing education needs of workers in my CLSC	0	7.7	36.5	55.8
The management team of my CLSC will support registration of workers in Unit "B"; thematic courses	0	5.1	42.4	52.5
The management team of my CLSC will support registration of workers for the complete certificate	0	15.3	44.1	40.6
I will support the implementation of the programme in my CLSC	0	5.0	53.3	41.7
Exclusiveness of the programme to workers of my CLSC	0	6.6	18.0	75.4
Classes given on site in my CLSC	0	1.6	9.5	88.9
Dependence of the programme on a University-CLSC partnership	0	4.8	22.2	73.0

The development of the programme is in the hands of a management committee with two representatives respectively: from the Federation, the Faculté des Lettres et Sciences Humaines, and the Faculté de Médecine. This committee decides course content, recruits the teachers and proposes changes and developments to higher authorities.

Day to day responsibility rests with two co-directors; one of them is also the coordinator. They are professors from the two faculties. They are responsible for the management of student registration, interaction with teachers, general communication and management.

The coordinator has the special task of negotiating the contracts with the interested CLSC and is in charge of liaison with the CLSC. The coordinator also acted initially as the secretary of the overseeing committee, thus providing efficient communication between the two levels. From January 1994, the coordinator is employed separately, with experience as a CLSC director. The coordinator is not a voting member of the management committee and will not be invited to the overseeing committee. The co-directors will thus play a more focused management and academic role.

Table IV. Results of the validation survey, sample of CLSC workers*

	Strongly Disagree %	Disagree %	Agree %	Strongly Agree %
I am interested in the projected programme (N=192)	1.0	10.4	38.0	50.5
I would support its implementation in my CLSC (N=193)	5.2	7.3	37.8	49.7
I would probably register in some courses (N=170)	10.6	7.6	41.8	40.0
I would probably follow the complete certificate (N=136)	14.0	27.9	39.0	19.1

* Not all participants responded to every question

Local management

Locally, the CLSC director names one person as responsible for communication and arrangements for the programme. This person collects the students' registrations, arranges for adequate course installations and provides the students with information from the university. Contact by students with the university is through this person only.

Finance

The cost of 45 hours of training was approximated to current privately offered sessions. This amount remains the same irrespective of the number of students registered for one course. However, the maximum number of students is fixed by the University to safeguard educational requirements. A CLSC might agree to pay the total amount and provide the course as part of its personnel development plan. Alternatively, the students would pay the University charges for a three-credit course and the CLSC would pay the remaining amount. Some CLSC arrange the sessions during working hours and pay their employees; others schedule the sessions during the week-ends. The CLSC reimburses the teacher for travel, lodging and meals. The amount paid by the CLSC covers the salary of the teacher sent to them. In the province of Quebec, the University also receives a grant for new students. This grant covers the management costs of the certificate course.

Early outcome

In December 1993, 45 CLSC registered as members of the network with an interest in the certificate. Three CLSC provided the first two courses in 1992-93, for a total of 50 participants. In 1993-94 three more CLSC provided courses with 63 participants for 14 courses. There were two drop-outs in the first year, one due to illness. The level of satisfaction of the participants is very high, even though the classes shorten their free time at the week-ends. As planned, only one person is needed to organise the activities at the CLSC. Eight part-time teachers were engaged and provided from 15 to 45 hours of teaching in the certificate course. The University only has to provide a secretarial office with a part-time secretary for the management of the course and student registration.

Conclusion

On-site continuing education as a prototype of university-community linkage

From the University's point of view, this unique programme permits the definition of a new line of theoretical development in primary care and at the same time contributes to the improvement of practice through continuing education. The current programme leads to a first level certificate. Some students have already indicated their intention to complete two other certificates, or to include other courses in this programme to obtain a bachelor's degree. This interest in improving one's level of knowledge is also seen in the potential offered by the CLSC network for on-site graduate studies. The programme is very flexible in evolution of content, provision of academic activities outside the traditional university walls and format, payment of tuition fees, and continuing evaluation of the programme. All these factors are essential in permitting a close relationship between primary care providers and University resources. A faster response to changes in health problems and the consequent adaptation of theoretical knowledge is the major gain on the academic side. Not to be forgotten is the necessary integration of social, medical and psychological approaches to the development of knowledge and its dissemination. Developing an active community network with the University through the CLSC opens up for the province a unique opportunity for research in primary care incorporating the aims of the CLSC in interdisciplinary work, community approach and local priorities.

References

Battista, R.N., & Spitzer, W.O. (1983). Adult cancer prevention in primary care: Contrasts among primary care practice settings in Québec. *American Journal of Public Health, 73(9),* 1040-1041.

Bélanger, J.P. (1992). *Le développement des soins primaires au Québec: Le cas des CLSC.* Montréal, Canada: Association pour la Santé Publique du Québec.

Compagnat, M. (1993). Rapport annuel1992. Sherbrooke, Canada: CLSC "SOC",

FCLSCQ (Fédération des CLSC du Québec) (1993). *Portrait des ressources humaines et* *pratiques de gestion dans les CLSC et Centres de santé du Québec*. Montréal, Canada: FCKSCQ.

Kellner, M. (1985). Community support networks: Current issues *Canadian Journal of Public Health, 76(Suppl)*, 69-70.

MSSS (Ministère de la Santé et des Services Sociaux) (1993). État de situation des CLSC et des Centres de santé: Données régionales et provinciales au 31 mars 1992. Québec, Canada: Direction générale de la coordination régionale, Ministère de la santé et des services sociaux.

Pineault, R., Maheux, B., Lambert, J., Béland, F., & Lévesque, A. (1991). Characteristics of physicians practising in alternative primary care settings: A Québec study of local community service center physicians. *International Journal of Health Services, 21, 49-58.*

Shannon, M.T. (1989). Health promotion and illness prevention: A biopsychosocial perspective. *Health and Social Work, 14(1)*, 32-40.

Annals of Community-Oriented Education
1994, Vol. 7, 237-247

PROBLEM-BASED LEARNING

An Update on Problem-Based Learning at Harvard Medical School

M. S. Wetzel
Harvard Medical School
Boston, MA, United States of America

Abstract

This paper presents an update on the present curriculum at Harvard Medical School. It offers a definition of "true" problem-based learning (PBL) as described by writers in the field, and examines the importance and use of PBL, along with other salient features, in Harvard's medical curriculum.

Introduction

There seems to be some uncertainty about the extent to which true problem-based learning (PBL) has been implemented at Harvard Medical School. The question might first be asked, "What is true PBL?" According to the classic definition by Barrows, "problem-based learning can be defined best as the learning that results from the process of working toward the understanding or resolution of a problem. The problem is encountered first in the learning process ..." (Barrows and Tamblyn, 1980). Albanese and Mitchell (1993), in their extensive review of problem-based learning literature, conclude that problem-based learning differs from other problem-centred methods in that **the problem is presented first, before students have acquired the background facts or concepts**. In contrast, the case method usually presents all the necessary data relevant to the problem and challenges students to analyze and draw conclusions from the information given.

In actual fact, the differences may lie chiefly in semantics. Terms such as patient problems, health care problems, and case problems are used interchangeably in many instances. For a case to be effective as a vehicle for problem-based learning, the element of the problem is all-important. Cases that simply present a narrative including all the relevant information and ask nothing of the student by way of problem-solving are not effective cases for problem-based learning. Barrows (1988), Kaufman (1985), and others have pointed out that it is important to create cases that simulate actual interaction with a patient as much as possible. There is some evidence that information learned in the context in which it will be used is more readily recalled (Godden and Baddeley, 1975).

The study of patient problems in small-group tutorials, and strong reliance on student self-study, are educational methods that have been widely associated with problem-based

Requests for reprints should be sent to M.S. Wetzel, Harvard Medical School, Office of Educational Development, 260 Longwood Avenue, Boston, Massachusetts 02115, United States of America.

learning at Harvard Medical School (HMS) and elsewhere (Barrows, 1988; Neufeld, et al., 1989; Adams, 1989; Kaufman, 1985; Blumberg and Michael, 1992). Schmidt (1993) offers evidence that the activity of group discussion enhances student learning in several fundamental ways. Among the desired outcomes are not only competence in the knowledge and skills of medicine, but also an awareness of the meaning of health and illness to the patient (Branch, et al., 1991), and a commitment to life-long learning (Fox and West; 1983; Candy, 1991).

The New Pathway Approach

In describing the "New Pathway", as the programme at Harvard is widely known, Dean Daniel Tosteson stated, "We do not offer a place or a solution, but rather a direction, a way" (Tosteson, 1990). The Harvard curriculum has also been described as "a hybrid model of problem-based learning" (Armstrong, 1991). This means that a variety of educational methods, based on adult-learning theory, are used to achieve the goals of the curriculum. The majority of the faculty staff probably think of the curriculum in the context of the New Pathway, rather than in terms of pure problem-based learning. It is well understood among the academics that this is an active rather than a passive educational approach, that it is student rather than teacher centred, that it relies on greater student responsibility for setting and pursuing educational goals, and that the concept of life-long learning is to be strongly emphasised. One of the directors of the eight-week Human Body course (anatomy, histology, radiology) stated that the goal is to have the students realize by the end of the course that they do not know any anatomy. Of course, they do know a certain amount of anatomy after eight weeks, but the teachers want the students to realize that it will be necessary to revisit the concepts taught in the course and to continue to learn about the human body throughout their professional careers.

At HMS we state our basic goals simply: **to enable the student to develop a broad and flexible knowledge base, a commitment to life-long learning, and sensitivity to the world of the patient.** To achieve these ends, problem-based learning is used in all core courses of the first two years, and in selective clerkships and advanced courses as well. **Ideally, students confront problems before they have had lectures in the relevant material, and they work their way toward the understanding of the requisite basic science.** To those who define "true PBL" as PBL alone, without lectures, the programme at HMS is not "pure", and is not intended to be. The heads of our courses and Curriculum Design Groups regularly make decisions about the format that is preferable for a particular topic. This is a reflection of deliberate and carefully considered choice, and not a lapse from problem-based learning or the original New Pathway.

To some, "true PBL" has been connected with, or even equated with a community-oriented educational programme. That has never been part of our definition, and should not make our use of PBL less "true". Our mission is to prepare students for a wide range of careers, including basis research, clinical investigation, health policy, public health, and many types of medical practice. Because of these varied goals, we have chosen an eclectic methodology.

Whether or not we have implemented true problem-based learning at Harvard Medical School is less important than whether we have designed and adopted a curriculum that is effective in maximizing the learning of our students and preparing them for their future work. To that end, we are committed to constant reexamination of our curriculum, with the goal of continual improvement.

Problem-Based Learning at Harvard Medical School - Then

In developing the New Pathway programme we were generously aided by colleagues at McMaster University, University of New Mexico, Southern Illinois University, Newcastle, Australia, and other medical schools where curriculum reform was established or under way. We are grateful for this help. The details of Harvard's development of its new educational approach have been well-documented elsewhere (Ramos and Moore, 1987; Office of Educational Development, 1989; Tosteson, 1990; Armstrong, 1991).

To recapitulate briefly, in the Fall of 1985, the first cohort of 24 students was admitted to the New Pathway programme. This was an alternative track featuring courses in the basic medical sciences integrated across disciplines, and early patient contact in a new longitudinal course called the Patient-Doctor Relationship. Courses were scheduled in blocks of six to eight weeks duration. The blocks featured the use of clinical cases to teach the basic biomedical sciences in small-group tutorials. Lecture time was reduced to roughly one hour per day, and protected time was set aside for self-study. Clinical problems in the tutorials were described for one course as "the backbone of the course, and all other exercises are limbs (some with a lot of muscle) that are given leverage and form by the cases" (Colvin, 1987). Tutors for the small groups were instructed to serve as guides and facilitators and to promote active student participation in the case discussions.

This first group of students and teachers was organised as the Oliver Wendell Holmes Society, named for the well-known writer, physician and Dean of Harvard Medical School. The commitment to problem-based learning was elucidated clearly in the first Oliver Wendell Holmes Society Program Guide (1985) in a description of the philosophy and method attributed to McMaster and adapted by permission. Problem-based learning, in addition to its use in tutorials, was also described as an important part of independent study. "As an educational approach, independent study shifts the focus of attention from a teacher-centered curriculum to a system where independent student learning is given the highest priority. Other terms used to describe this approach are independent learning, life-long learning, student-centered learning, and adult learning." (Oliver Wendell Holmes Society Program Guide, 1985).

After two years, the decision was made to extend the New Pathway curriculum to the entire HMS student body. This did not include approximately 30 - 40 students who were enrolled in the Health Sciences and Technology (HST) programme, a joint educational programme with the Massachusetts Institute of Technology, leading to the M.D. degree. Thus, in the Autumn of 1987, 160 students in the entering class were enrolled in a common curriculum that reaffirmed reduced lecture time, small-group tutorials, commitment to problem-based learning, and strong reliance on students' pursuit of self-directed study. The block format interdisciplinary basic science courses and the year-long Patient-Doctor Relationship courses in the first two years continued as the mainstay of the curriculum. Electives in the first two years were now transformed into four semesters of "selective" courses meeting one afternoon per week for one to three hours. First-year students studied Health Care Policy (Biostatistics/Epidemiology), and Social Medicine. In the second year, Behavioural Science (Psychopathology) and Preventive Medicine/Nutrition are the prescribed courses. These courses are taught by a combination of traditional and New Pathway methods.

The curriculum of the third and fourth years was also modified to include new clerkships in Ambulatory Care and Women's and Children's Health (combined and expanded Obstetrics and Gynaecology and Paediatrics clerkships). Student-orientated teaching was emphasised, with more participation by senior clinical academics. A third-year Patient/Doctor course was added, and students also participate in a one-month programme of Advanced Biomedical Sciences during the third or fourth year. These are seminar-type courses which focus on the interface between the basic sciences and clinical practice (HMS Course Catalog, 1993-94.

Structural Changes

Along with the extension of the curriculum to the entire HMS student body in 1987 came a move into a renovated Medical Education Center and a new organisational structure to oversee all educational programmes leading to the M.D. degree. Three new societies were formed in addition to the original Oliver Wendell Holmes Society, and the Health Sciences and Technology programme. Approximately 40 students enter each society each year. A senior faculty member serves as Master of each Society. Space in the new building is provided where students and teachers can meet, study, and relax, and a full-time Administrative Assistant ensures the smooth daily operation of each society.

Problem-Based Learning at Harvard Medical School - Now

Six years later, what is the status of problem-based learning at HMS? The society structure has thrived and is now known as the Program in Medical Education (PME). The five Masters, under the leadership of Daniel D. Federman, Dean for Medical Education, comprise the Council of Masters, and bear responsibility for all aspects of the educational plan, including oversight of the PME budget and the development and review of educational policies. The Master within each Society is charged with creating an organization to achieve curricular innovation, course evaluation, feedback from teachers and students, and vertical integration of the curriculum across the entire four years (Tosteson, 1992).

Each society has its own assigned classrooms and laboratory space in the Medical Education Center and a small staff in addition to the Master, usually consisting of one or two faculty colleagues who serve as Associate Masters, the Administrative Assistant, and a Program Officer. The Societies also organise paracurricular and social functions that bring teachers and students together. To foster continued educational growth and innovation, each Society has been assigned an area in which to provide leadership for the entire school. For example, the Holmes Society focuses on multiculturalism, and this society is working on the design of an alternative Patient-Doctor Relationships course that will be affiliated with multiethnic community health centres. Innovations developed in one society as a proving ground may eventually be adopted by others. The five academic Societies are successfully evolving into the entities they were envisioned to be — as meeting places for students and teachers and as testing grounds for improvements in medical education (Tosteson, 1993).

The Deans and the Council of Masters remain firmly committed to the original principles of the New Pathway. The courses of the first two years for four of the Societies, with the exception of the Harvard-M.I.T. Health Sciences and Technology programme, continue to be organised with the small-group tutorial as the central learning activity. These societies share an identical curriculum and educational methodology. Students are assigned to tutorial and laboratory groups within their own Societies, and academics are developing society affiliations, but each course is planned and implemented by an overall Course Director and Curriculum Design Group (CDG) for that course. Dental students from the Harvard School of Dental Medicine (HDSM) are presently included as members of the four Societies, and participate in the problem-based medical curriculum for the first two years. Plans are under way at HSDM to develop a four-year New Pathway-type curriculum of its own.

Five professional educators with doctoral degrees and their assistants work as a cross-society Council of Medical Educators under the leadership of Elizabeth Armstrong, Ph.D., Director of Medical Education. They provide expertise in curriculum development and coordination, student and programme evaluation, faculty development, and the preparation of cases and other course materials. In addition, each educator respectively supports the educational initiatives of the Master and teachers of one Society. It is this team of professional educators and a core of faculty members and course planners, particularly active in the education of medical students, who are the most conversant with the technical aspects of problem-based learning, and most supportive of its principles. Dean Federman has characterised the relationship of the academics with the educators as beginning with outright suspicion, progressing to grudging admiration, and finally absolute dependence. By now, course directors could not conceive of putting on a course without the help of a curriculum coordinator (Federman, 1990).

Current revisions of the second-year Human Systems (pathophysiology) course reaffirm the central role of the tutorial, limited lectures, and protected self-study time. Integration across the basic medical science disciplines in this course is being strengthened, with one course director presiding over a larger portion of the course, encompassing several organ systems, and tutors recruited to serve as small-group facilitators for longer blocks of time. An effort is also being made to coordinate Human Systems as much as possible with the concurrent clinical instruction in the Patient Doctor II course.

The long, unfolding cases used as the basis of each week's study in the Human Systems course are supplemented by additional active learning activities in groups of 10 to 40 students. **All these activities use the principles of problem-based learning, presenting a problem in the context of clinical cases of varying lengths, and affording students the opportunity to raise their own questions and grapple with the often fuzzy and complex issues of human health and disease.** These activities include laboratory sessions, conferences, mini-case discussions (several short cases used in one session to provide practice in applying major concepts, or broaden exposure to additional disease mechanisms), and multi-station exercises.

The multi-station exercise is a variation on the basic learning station idea dear to the hearts of education innovators in the 1970s. This particular application has been developed for medical students at HMS by the author and Dr. Lynne Reid. While its format is somewhat like an Objective Structured Clinical Examination (OSCE), it is a teaching/learning exercise, not an assessment. It is particularly well-suited for any teaching objective that includes the interpretation of a visual element, and features a high degree of small group interaction while requiring only one faculty member for 35-40 students. In a 90-minute session, the students divide into small groups and spend seven to eight minutes at each of four to six stations. Each station includes a brief clinical vignette, together with appropriate illustrative materials (x-rays, scans, pathology slides, peripheral blood smears, etc.). The students discuss the presenting problem, drawing on their pooled knowledge and powers of observation. The entire group assembles for the remainder of the session and each small student group presents the last station they have seen to the entire class. The faculty member serves as timekeeper and mentor, adding a word of encouragement here and there, or asking a probing question during the small-group discussions, and chairing the final presentations.

Looking Across the Years

One of the most heartening changes over recent years is the interest of groups of academics in looking across the four years and discussing the entire sweep of the curriculum. Course directors from the first two years meet with clerkship directors from Years III and IV to discuss the interface between the preclinical and clinical years. This reaffirms the original New Pathway idea of blurring the boundaries of the basic science and clinical areas.

Students begin patient contact in the first weeks of medical school as they learn to interview patients in Patient-Doctor I, and basic science is revisited in the third or fourth year in an advanced biomedical science course. Even so, the transition from the largely classroom and laboratory-based educational setting to the world of patient care in the hospitals, doctor's offices, and clinics is not an easy one. Faculty members teaching in the clinical years have become increasingly interested in improving teaching and becoming conversant with the principles of problem-based learning, but there are the inevitable constraints of lack of time and the overriding demands of patient care.

Faculty support for the new curriculum has undoubtedly increased over the years. The ideas of problem-based learning and student-centred learning no longer elicit heated debate. Prospective tutors willingly accept the tutelage of the educators and experienced tutors in the art of encouraging student interaction in the tutorials, and become adept in the less active role of facilitator. Student support has always been strong, but has no doubt grown stronger. There were, understandably, doubts and uncertainty on the part of some members of the first classes. Students who were the products of highly traditional undergraduate programmes, where memorisation was the basic mode of learning, naturally had a certain amount of anxiety when confronted with the responsibility to decide for themselves what to learn. It would be difficult now to find any student who would willingly trade the present tutorial-based method of study for five or six hours of lectures per day.

Within the school, and to most of the outside world, HMS is seen as having a firmly-established problem-based curriculum cast in a particular mold. In comparison to some other problem-based curricula, Harvard's programme of study undoubtedly relies to a greater extent on a faculty-determined structure of topics and activities. To this extent it might more accurately be termed a *student-centred*, rather than a *student-directed*, curriculum. Academics and educators write goals for each course, determine objectives for the cases, devise a variety of teaching/learning modalities in addition to the small-group tutorial, and set examinations.

An effort is made to use types of examinations that are congruent with the problem-based curriculum, emphasizing the understanding of concepts and problem-solving rather than the recitation of facts. These range from case-based examinations requiring short essay answers to full-fledged Triple-Jump (Powles, et al., 1981) or Quadruple Jump Examinations, a Triple-Jump with an added laboratory exercise (Colvin and Wetzel, 1989). Mid-term and final examinations are given in most of the courses, with the mid-term sometimes cast as a self-assessment. In the current revision of the second-year Human Systems sequence, a conscious decision was made to use more formative assessment exercises and to reduce the number of summative examinations. Two weeks have been set aside during the course (Weeks 10 and 18 of a 23-week course) as Integrative Assessment Weeks. During these weeks, special cases, multi-station exercises, and written examinations will be given that draw on all organ systems studied. This includes in the final week a full day of clinical assessment.

Grading in the first two years is "Satisfactory" or "Unsatisfactory", allowing teachers to determine in a global sense whether the student has mastered the basic material of the course. This type of grading is also extremely important in removing the sense of competition among students in the tutorials and other aspects of the courses, and in fostering the desired skills of collaboration. One student described it thus: "In a traditional curriculum you hope your classmates don't study so you can appear brilliant; in the New Pathway, you hope your classmates do study, because we all learn from each other."

While faculty members at HMS realize all too well that they cannot know what all the essential information will be for physicians practising in the 21st Century, they feel a responsibility to construct a curriculum that provides a firm grounding in the wisdom of the present upon which the students must build through continuing self-study throughout their lives. Within the framework of the HMS curriculum, there is plenty of room for students to determine the focus and direction of their study and to become accustomed to living with the sense of uncertainty about what they must know that will characterize much of their professional lives. The aim in the pre-clinical years is to enable the students to develop facility in problem-solving and to build a solid foundation of knowledge about the normal functioning of the human body and the mechanisms of disease.

The use of computers in the New Pathway programme has been important from the start. All patient write-ups in the first year are required to be word-processed, thus assuring that all students have a basic facility with a word processing programme. In the second year, one or more exercises related to a patient require a literature search. Even without this requirement, many students are adept in the use of bibliographic searching for their independent study. A newly-upgraded Student Computing Center offers many supplementary education programmes and cases for study on both DOS and Macintosh computers, as well as sophisticated video disk teaching aids. A statistical program is available, so that data sets from epidemiological studies can be manipulated. There are sufficient computers in the Society areas, the library, and the Student Computing Center for all students to have access to computers, although they are not required to own one.

"A Good Curriculum Is Never Finished ..."

Paraphrasing the oft-quoted medical educator Alan Gragg, we look on the development of the curriculum as work that continues on into the future. For example, it was anticipated in the early plans that students would be able to devote approximately 40 percent of their time over the four years to elective study. This is an ideal that has not been fully realised but work continues on offering attractive basic science and clinical electives in the time that is available. There was also to be a strong focus in the curriculum on health promotion and disease prevention. A faculty coordinator has been in place since the beginning to actively promote this theme. To strengthen this aspect of the curriculum, a Department of Ambulatory Care and Prevention has recently been established, and all second-year students take a course in Preventive Medicine/Nutrition. Additional themes that are being tracked and enhanced throughout the curriculum are Ethics, AIDS, Occupational Medicine, Geriatrics, and Substance Abuse.

At times there are those who worry about keeping the vision of the original New Pathway alive in the face of the natural tendency for an organization to regress to a previous mode of operation. In a Faculty as large as Harvard's, there are still many faculty members with the deeply held conviction that a well-organised, comprehensive lecture is the best vehicle for learning. They fear that there is not enough time in the tutorials for the essential facts to emerge from the study of cases, and not enough motivation on the part of the students to learn in sufficient depth through self-study.

In a problem-based curriculum, it is essential to trust the student, but this requires a leap of faith that is difficult for some faculty members. It is even more difficult for others to agree that the student should approach the problem first. It is perhaps ironic that the most fundamental precept of problem-based learning is also the most difficult for some academics to accept. The educators working with course planners are accustomed to hearing the argument that the students must have a lecture on a certain topic before approaching a case "so they have the vocabulary," or "so they know enough to have a productive tutorial discussion." In spite of a tutor training programme, some tutors have considerable difficulty in seeing the value of allowing and encouraging students to raise their own questions in their pursuit of knowledge. While they are often reassured by the amount of learning students display in the second tutorial on a case, there are those who feel that too much time is wasted in the first tutorial while students try to find their way. Students, however, value the process of reasoning through the issues of a case, deciding on a common learning agenda, and setting their own priorities for self-study.

Conclusion

Harvard Medical School's society-based curriculum for the pre-clinical years has been enhanced in important ways, but it continues to be fundamentally very much like the original New Pathway curriculum. Problem-based learning in small-group tutorials remains at the heart of the curriculum. Other important features include the use of a variety of active, small-group teaching methods, emphasis on student responsibility for setting and pursuing educational goals now and in the future, and development of attitudes of respect and caring towards those they will serve, aided by early and continuing patient contact. While Harvard academics take the responsibility for developing the framework for the educational programme, it is very much student-centred in its implementation. It is doubtful, and possibly not desirable, that the curriculum should ever be considered "perfect", or "finished". Rather, it is important that it continues to be examined and revised to meet the ever-changing educational needs of students preparing for medical careers in an ever-changing world.

Acknowledgements

The author wishes to acknowledge the valuable comments contributed by Elizabeth Armstrong, Susan Carver, Daniel Federman and Jane Neill.

References

Adams, R.S. (1989). Making doctors: A new approach. *Teaching and Learning in Medicine, 1(2)*, 62-66.

Albanese, M.A., & Mitchell, S. (1993). Problem-based learning: A review of literature on its outcomes and implementation issues. *Academic Medicine, 68(1)*, 52-81.

Armstrong, E.G. (1991). A hybrid model of problem-based learning. In: D. Boud, & G. Feletti (Eds.). *The challenge of problem based learning.* London, United Kingdom: Kogan Page.

Barrows, H.S. (1988). The tutorial process. Springfield, IL: Southern Illinois University School of Medicine.

Barrows, H.S., & Tamblyn, R.M. (1980). *Problem-based learning: An approach to medical education.* New York, NY: Springer Publishing Co.

Blumberg, P., & Michael, J.A. (1992). Development of self-directed learning behaviors in a partially teacher-directed problem-based learning curriculum. *Teaching and Learning in Medicine, 4(1)*, 3-8.

Branch, W.T., Arky, R.A., Woo, B., Stoeckle, J.D., Levy, D.B., & Taylor, W.C. (1991). Teaching medicine as a human experience: A patient-doctor relationship course for faculty and first-year medical students. *Annals of Internal Medicine, 114(6)*, 482-488.

Candy, P.C. (1991). *Self-direction for lifelong learning: A comprehensive guide to theory and practice.* San Francisco, CA: Jossey-Bass.

Colvin, R.B. (1987). *Identity and defense curriculum guide.* Harvard Medical School (unpublished).

Colvin, R.B., & Wetzel, M.S. (1989). Pathology in the New Pathway of medical education at Harvard Medical School. *American Journal of Clinical Pathology, 92*, 23-30.

Federman, D.D. (1990). From a talk at the Office of Educational Development Retreat, July 29. Wellesley, MA: Wellesley College.

Fox, R.D., & West, R.F. (1983). Developing medical student competence in lifelong learning: The contract learning approach. *Medical Education, 17*, 247-253.

Godden, D.R., & Baddeley, A.D. (1975). Context-dependent memory in two natural environments on land and underwater. *British Journal of Psychology, 66*, 325-31.

Harvard Medical School Course Catalog; 1993-94.

Kaufman, A. (1985). *Implementing problem-based medical education: Lessons from successful innovations.* New York, NY: Springer Publishing Co.

Neufeld, V.R., Woodward, C.A., & MacLeod, S.M. (1989). The McMaster M.D. programme: A case study of renewal in medical education. *Academic Medicine, 64*, 423-432.

Office of Educational Development. (1989). The new pathway to general medical education at Harvard University. *Teaching and Learning in Medicine, 1(1),* 42-46.

Oliver Wendell Holmes Society Program Guide. (1985). Harvard Medical School (unpublished).

Powles, A.C., Wintrip, N., Neufeld, V.R., Wakefield, J.G., Coates, G., & Burrowsm, J. (1981). The "triple jump" exercise: Further studies of an evaluative technique. *Annual Conference on Research in Medical Education, 20,* 74-79.

Ramos, M., & Moore, G.T. (1987). Harvard Medical School: The new pathway to medical education. In: M. Kantrowitz, A. Kaufman, et al., (Eds.). Innovative tracks at established institutions for the education of health personnel. Geneva, Switzerland: World Health Organization.

Schmidt, H.G. (1993). Foundation of problem-based learning: Some explanatory notes. *Medical Education, 27,* 422-432.

Tosteson, D.C. (1990). New pathways in general medical education. *New England Journal of Medicine, 322(4),* 234-238.

Tosteson, D.C. (1992). HMS Dean announces the appointment of new society Masters and the enhancement of society functions. *Focus, July, Special Issue,* 1-4.

Tosteson, D.C. (1993). *Dean's Report.* Boston, MA: Harvard Medical School.

Annals of Community-Oriented Education
1994, Vol. 7, 249-257

Problem-Based Learning: An Option in Nurse Education

B.M. Andersen
University of Western Sydney, Macarthur
Sydney, Australia

Abstract

This paper addresses the relevance of problem-based learning (PBL) in nurse education and provides a justification for its adoption in terms of the enquiry-based nature of professional nursing practice,the context of practice and adult learning principles.
It provides an outline of one option for faculties with at least a relatively satisfactory resource base (including qualified personnel) and an alternative approach for faculties or departments of nursing less well resourced. Reference is made to the implications for assessment when a PBL approach is adopted, and the prerequisites of successful implementation have been identified.

Introduction

This paper provides an account of the adoption of problem-based learning (PBL) in a newly formed faculty within higher education in New South Wales, Australia. It acknowledges that the opportunity to change from a traditional educational programme to problem-based learning came as a result of the mass transfer of nursing education in 1984-85 from the hospital schools of nursing to the higher education sector and a transformation in the way the practice of nursing was viewed. However, the reason for adopting PBL went beyond the act of transfer to higher education.

Extensive research conducted by Andersen (1978) suggested that student nurses were performing below their potential and certainly below the level appropriate for exercising informed clinical judgments. In particular it revealed deficits in such key behaviours underlying clinical judgment making as enquiry and processing skills and the apparent non-development of concept networks when structuring acquired knowledge. Both these deficits had an inevitable influence on the quality,not only of judgment, but also of any intervention initiated by the nurse. Further,the study revealed that in the curriculum an undue emphasis was placed on the recall of knowledge and on descriptive teaching which encouraged one-to-one "matching" behaviours rather than development of concept.There was no,or at best limited, expectation that the nurse should generate,evaluate and use information. The importance of these behaviours had been determined from an analysis of actual practice and the demands made of professional nurse practitioners in various clinical contexts (Andersen, 1978 & 1991). Theory, which shows a close relationship between thinking, judgment and action , also adds strength to such a claim.

Requests for reprints should be sent to B. M. Andersen, P.O. Box 10, Catherine Field, NSW 2171, Australia.

In addition to the functional expectations held of the nurse, the context within which practice takes place provided further support in favour of changing the educational approach. The context of practice has action of one form or another as its basis; situations, circumstances, and conditions change, and often very rapidly. Practice is complex, as many interactive factors combine to determine any one patient/client situation, and there is usually a varying number of patients at any one time. In some fields of practice a response very often must be immediate with consequences which might be life threatening in nature. (Andersen, 1992)

Thus a practice environment,characterised by change,complexity and variety, demands of the professional nurse the ability to: deal responsibly with the unexpected or unknown; make informed judgments,including the setting of priorities,the initiation of action and/or referral, all involving acquisition, processing and use of information from a variety of sources; work with confidence as a member of a team which may require initiation of independent action or interdependent and/or dependent action; and be proactive in anticipating change when it is needed.

The final compelling reason for adopting a particular educational approach (in this case problem-based learning) is its relevance to adult learning in a practice-based profession. Many theorists have written about such principles of learning as, active involvement on the part of the learner; the relevance of the learning process and its outcomes to the learner's purposes; the role of experience and the opportunity to 'act out' what has been learnt; and the provision of feedback in respect of learning outcomes. It is claimed that the orientation of adults to learning is more situation-driven than subject-driven and that they respond to being self-directed and actively involved in the decision making, planning and implementation of learning activities. The group setting is also one in which adult learning is enhanced where, according to Maclean (1987) the interplay of ideas allows students to build on the combined resources of the group. This setting is part of the learning climate which fosters self-esteem, interdependence, the freedom to make mistakes, and not to know all the answers but to know how to find them. Reflection, as an inherent part of the learning process, involves not only reflecting on the outcomes of learning but on the process as well. When coupled with the ability to self-evaluate, the learner will have developed lifelong skills invaluable for all professionals.

Experience with the implementation of the first integrated PBL programme for pre-registration nurse education in Australia has further confirmed the validity of the approach, essentially because of the congruence evident between the processes of learning and practice.

In the remainder of this paper, one option for PBL implementation in nurse education in relatively ideal circumstances will be discussed. Reference will also be made to a pilot scheme where limited facilities and resources and an existing curriculum dictate a modified adaptation of PBL as the preferred option at this point in time.

PBL at the University of Western Sydney

The programme in nursing at the University of Western Sydney, Macarthur (UWS,M) evolved over a period of four years from a limited application of PBL to a totally integrated problem-based learning course. It is undergoing further changes which result from external pressures beyond the control of curriculum designers. As a PBL course it was designed with the following principles operating.

1. Learning is enhanced when the stimulus to learn has its origins in the clinical or practice context;
2. Learning is facilitated by the enquiry process;
3. Meaningful learning (in an action context) is dependent on the integration of knowledge and skills from various disciplines and from a variety of sources;
4. Learning is dependent on the active involvement of the student and, therefore, requires self-directedness and the acceptance of responsibility by the student for learning, self evaluation and reflection.

The focus is on learning and on the use of clinical situations rather than on subject disciplines to stimulate and organise learning.

This undergraduate programme was designed to cater for a maximum intake of 300 students per annum for a three year Bachelor of Nursing course. The student population is representative of the very diverse ethnic origins of the population in the south west of Sydney. All staff for the course were recruited to the one Faculty/Department irrespective of the discipline area. Therefore the problems associated with cross-servicing by other departments did not occur.

In addition to the adoption of the PBL approach, the curriculum at UWS,M was developed within a well defined conceptual framework. The beliefs about the nature of nursing of health and health breakdown, of the intervention activity and of society provided the framework within which the educational approach could be developed and interpreted (Andersen,1978, 1991). This framework made the programme uniquely nursing and not simply an adaptation of the medical discipline's approach to PBL.

While adopting the generally accepted principles of PBL, the UWS,M version focuses not on problems but on patient situations, and not necessarily on solving problems but on improving those elements of the patient situation which are in need of improvement,particularly in relation to activities of daily living. This approach extends the enquiry,causes the student to identify and integrate learning from a variety of disciplines and to adopt an holistic approach when planning and giving patient care. Community and/or environmental health issues may similarly be the focus of a defined situation.

From Principles to Implementation

The practical application of the principles of PBL has consequences for both curriculum structure and process. The faculty at UWS,M experimented with different structures but at the time of the first major review in 1989 moved to a radical structure.

It should be noted that different structures can achieve the desired outcomes and that they are to some extent a reflection of the particular circumstances,conditions and constraints within which a faculty is working. The example of how PBL was implemented at UWS, is just that - an example. What matters is the acceptance of certain principles in terms of development and implementation and then to find the best "fit" of curriculum structure and process in the given circumstances.

The revised course was organised around one integrated subject per year with each subject consisting of five modules. The modules had themes or a particular focus, (e.g. "Life Span Development","Confusion", "Environmental influences on Health","Rehabilitation") and consisted of a number of learning packages, known as situation improvement packages (SIPs). The number of SIPs varied from 2-4 per module according to the nature of the situation and the scope of learning issues inherent in it. One module per year consisted entirely of clinical experience; the rest were mixed, clinical and classroom. (Changes to this structure are occurring because of new student fee paying rules).

All students were allocated to a "home" group. The size varied from 20-26 for the purpose of classroom or campus activity and 8 for clinical work. The numbers are greater than the preferred 12 classroom group but represent a compromises given the funding allocation to nursing.First year has the smaller group size because they are new to the approach and need more assistance.

Each group has one process facilitator from the faculty staff and stay together for classroom activities for one semester. For clinical experience periods the configurations of the group varies due to different supervision ratio and various clinical area limitations. The facilitator will remain with the same group for classroom activities. In the clinical area the students will work with a range of different teachers which may include their"home" group facilitator from time to time.

During campus or classroom activities, first year students will usually attend for 18 contact hours per week including some scheduled self-directed time. Third year students are scheduled for only 15 hours weekly, also inclusing some self-directed time. Laboratory practice time is negotiated separately by the students individually.

In addition to acting as enquiry process facilitators, staff function as expert resource persons. In this capacity they may provide fixed resource sessions when skills can be demonstrated or, particular theoretical input,not otherwise available to the students, can be given. When acting as process facilitators,staff are not necessarily expert in the content area of the learning package which the students are exploring. However, a facilitator guide, prepared by the content expert, allows the process facilitator to anticipate the learning issues which should be identified by students as they explore the package.

The learning process

The learning process is set in train when the students are confronted in their group with a limited amount of patient data and are challenged to assume the role of the nurse practitioner. The need to know more about the given situation; to make all information work for them and to act out the role of the nurse practitioner in planning for, and/or giving care is a powerful stimulus to learning. Both the need to know and the need to make informed clinical judgments are mediated by the enquiry process which allows the unknown to be addressed - further reinforcing the claim of congruence between the processes of learning and practice.

The learning package, based on actual cases, it is usually presented in print. In the clinical setting actual patients provide the stimulus for learning (Andersen, 1993).
The package is organised to present the students with a gradually developing patient situation, as it would be encountered in the real world. Each new development, presented as a new block of data represents a further stimulus to update earlier thinking about the situation and to learn more. The data may illustrate actual pathophysiology and/or psychopathology;patient responses to illness and to hospitalization; the social background and/or environmental factors. Each such development leads to the need to intervene and evaluate that intervention in terms of outcomes and appropriateness whether the care was actually given (in a clinical setting) or only proposed (in the classroom). The student is required to consider what may have happened in the past, what is happening in the present situation and to anticipate the consequences or implications of acting or not acting in a particular way.

Students are expected to be active in group and individual learning and to acquire quickly self-directed behaviours. Initially, however, some structure and direction is given by the process facilitator in terms of the following six elements: how to initiate,proceed with and test the enquiry process; how to identify learning issues; why such learning is important; which sources best provide learning resourses; how to relate this learning back to the case; and how to develop criteria to evaluate and reflect on learning and care proposals.
It was the experience at UWS that most students very quickly became relatively free of the facilitator in initiating and directing this process. This freedom played a significant part in developing self-confidence and a high level of motivation among students who previously had little, if any, confidence in their own ability. A typical and spontaneous response to any questions asked of them regarding how they felt about this approach to learning was, *"initially we did not like it but now we would not have it any other way because we own what we do and learn and it has made a difference to how we function not only as nurses but as people"*.
The six elements provide one framework for evaluation of the effectiveness of the curriculum by measuring the extent to which students can act autonomously in relation to each element.

The most obvious change in the role of faculty staff was from teacher and teller to facilitator of a process. This change was not an easy one, nor was it achieved overnight or sustained by all members of the Faculty. In particular the facilitator was required to challenge the students to clarify their contributions; seek elaboration as necessary; prompt and ensure accuracy of input; cause students to relate learning to the present situation; seek justification of judgments; foster knowledge networking and an understanding of how the students' proposals fit with the theory of nursing; and provide feedback.

Assessment of students' progress and achievement

While changes in the staff's role and their relationship with students represented one of the major challenges, change in assessment methods was also inevitable.

The impact on student assessment on the adoption of PBL and, therefore, the acceptance of the particular learning principles associated with the method was far reaching. The traditional emphasis on knowledge of content and the competitive grading of students were deemed inappropriate for learning which emphasized process skills as well as content and which required self-directed and co-operative learning. Furthermore, the integrated nature of knowledge structures relevant to clinical judgment and problem solving and the clinical origin of the students' learning demanded assessment methods which were related to performance. The Faculty at UWS,M decided to adopt competence-based assessment to ascertain not only precise student abilities, but also to provided detailed and structured feedback to students as they progressed in incremental steps towards completion of the course (Course Document, 1991). Care was taken to avoid the potential pitfalls of some competence based assessments. A holistic approach,consistent with the recommendations of Masters and McCurry (1990), was adopted where professional competence is defined as "*the ability to draw on and integrate a variety of knowledge and skills to address realistic workplace problems*". Broad performance categories were specified, and competences were identified for each performance category,together with standards or criteria for each competence. Students were provided with published, explicit and specific competences and their criteria for each component of their assessment.

Different areas of professional competence require different methods of assessment, so that a combination of assessment tasks was used. Some tasks were based on the student's exploration of the learning packages, on contribution to the group and on peer learning. Other tasks included essay writing, oral assessment, clinical performance, clinical incident analyses and the Objective, Structured Clinical Assessment (OSCA) (McMillan, 1990; Bujack et al., 1991).

Assessment was continuous and cumulative, with some form of integrated assessment in each module. This formative assessment had the advantage that students had regular feedback and could determine for themselves where they were in relation to the course objectives and their own goals. Remediation strategies were available to assist students whose performance suggested that they were performing below the desired standard. Opportunities for re-assessment were provided at different times throughout the year. The same competences were assessed in clinical as well as classroom settings.

Self-assessment and peer-assessment were an integral part of the process, and students became adept at devising criteria, as well as applying those which had been provided. In both cases they were required to support their conclusions about personal or peer performance by citing incidents to justify their claims.

An Alternative to Total PBL Programmes

The foregoing discussion outlined a "custom made" programme with the deliberate intention to design the course around PBL principles. Not everybody has such an opportunity. It is here suggested that limited changes can be made in an existing curriculum whereby PBL principles can be adopted, at least within the modified components.

A pilot programme

Interest was shown within the Health Manpower Education Centre in Indonesia in introducing PBL in nursing education. A period of three years has elapsed since the initial overtures and during that time steps were taken to lay good foundations in preparation for the present project.

Despite constraints and limitations in terms of resources, qualified personnel and a centrally prescribed curriculum with which schools are required to conform, a way has been found to make some adaptations.

Staff development

The initial task was to make as many people as possible familiar with the principles and processes associated with PBL. As specialist consultant the author found little difficulty in gaining support among nurse teachers and leaders for the principles previously identified. Initial training of a core group focused on the development of learning packages and on facilitation of the enquiry process together with an introduction to assessment of students.

Curriculum adaptation

It was planned to try the project out with students in the Diploma level course at one Academy and to stage the introduction over a three year period. One key course strand, Community Health Nursing was selected because of the ready recognition of the relevance of the approach to this subject and because it continued over a two year period. Each subject in the existing curriculum has a three hour seminar allocation per week. This time was readily made available for the PLB tutorial and exploration of the "situation improvement" packages (SIPs). An analysis of the subject topics for the semester revealed that they fell naturally into three clusters or groups. It was not difficult then to foreshadow the development of a SIP for each grouping and to suggest that each SIP should consist of at least three blocks of data, each block allowing the content of existing topics to emerge. The data was to be developed from material collected from community health centres and, therefore, representing actual cases which might be encountered by practising nurses.The application of the approach was to be limited to the one subject in the first semester, with a plan to increase the application and the extent of integration as experience was gained semester by semester. This project is very much in its infancy as staff are in the process of collecting case material at the time of writing.

Discussion

Whether implementing a total or partial PBL programme, certain prerequisites are essential. There must be an informed awareness of, and commitment to the principles and processes associated with PBL and a capacity to make some changes to the curriculum. Staff development in terms of the facilitation process,management of small groups and the collection and compilation of learning materials needs to occur before and during the implementation process. Inherent in the changes to the curriculum is the need to review methods of assessment to ensure that they are consistent with the learning approach. Careful planning and the taking of small incremental steps throughout the development process will reduce the work to managable proportions.

The result is rewarding for staff and student alike. A sample of 1988 UWS,M graduates in clinical practice (McMillan, 1992) indicated the following: they were comfortable with the idea of personal responsibility for ongoing learning; they sought daily additional knowledge or confirmation of their knowledge; while sometimes anxious,they felt particularly well-equipped to cope with change; they considered that they showed initiative, were self-directed in their approach to patient care, and coped well with "novel" situations; and they believed that they used problem-solving strategies automatically on most occasions.

Summary

The decision to adopt a PBL approach to nurse education has been justified in terms of the nature of nursing practice, its context and adult education principles. This includes the fact that the demand made on learners replicates the performance demands on nurse practitioners. Historically, the emergence of PBL programmes in nursing education in Australia began with a limited application but evolved into a total programme which was firmly rooted in a nursing framework. It is reasonable to claim that the graduates have acquired the art of being self-directed learners and problem-solving practitioners.

References

Andersen, B. (1978). *A basic nurse education curriculum evaluation incorporating: An investigation into the cognitive aspects of clinical judgment of senior trainee nurses.* Sydney, Australia: New South Wales College of Nursing.

Andersen, B. (1991). Mapping the terrain of the discipline. In: G. Gray, & R. Pratt (Eds.). *Towards a discipline of nursing.* Melbourne, Australia: Churchill Livingstone.

Andersen, B. (1992). Congruence of practice and educational approach: Why PBL in nursing? In: *Problem-based learning in nurse education and practice.* Conference proceedings, National Nursing Conference April-May 1992. Melbourne, Australia: Quality Health Forums P/Ltd.

Andersen, B., & McMillan, M. (1992). Learning experiences for professional reality and responsibility. In: J. Mulligan, & C. Griffin (Eds.). *Empowerment through experiential learning*. London, United Kingdom: Kogan Page Ltd.

Andersen, B. (1993). The case for learner managed learning in health professionals' education. In: N. Graves (Ed.). *Learner managed learning*. Leeds, United Kingdom: A.W.Angus & Co Ltd.

Andersen, B. (1993). Clinical situations: An organisational basis and learning stimulus for nurse education. In: P.A.J. Bouhuijs, H.G. Schmidt, & H.J.M. van Berkel (Eds.). *Problem-based learning as an educational strategy*. Maastricht, The Netherlands: Network Publications.

Bujack, E., McMillan, M., Dwyer, J., & Hazelton, M. (1991). *Asssessing comprehensive nursing performance: Part I Developing the assessment strategy*. Nurse Education today.

Faculty of Health (1991). *Course assessment document, bachelor of nursing*. Sydney, Australia: University of Western Sydney, Macarthur.

Maclean, H. (1987). Linking person centred teaching to qualitative research training. In: D. Boud, & V. Griffiths (Eds.). *Appreciating adult learning: From the learners' perspective*. London, United Kingdom: Kogan Page Ltd.

Masters, G.N., & McCurry, D. (1990). Competency based assessment for the professions. Nat*ional Office of Skills Recognition*. Research Papers No 2 Canberra, Australia: AGPS.

McMillan, M. (1990). *An evaluation of the use of objective structured clinical assessment (OSCA) within the School of Nursing*. UWS,M University of Western Sydney, Macarthur, Sydney.

McMillan, M. (1992). *A case study of the implementation of a tertiary based nursing programme using problem-based learning*. PhD Thesis. Armidale NSW, Australia: University of New England.

Annals of Community-Oriented Education
1994, Vol. 7, 259-266

The Problem-Based Learning Curriculum at Southern Illinois University School of Medicine: A Student Perspective

D.P. Regnier, J.L. Welsh and B.L. Quarton
Southern Illinois University
Springfield, Illinois, United States of America

Abstract

From August 1991 to June 1993 eighteen students in the second class of Southern Illinois University School of Medicine Problem-Based Learning Curriculum completed their first two years of medical training. This paper highlights the salient strengths and weaknesses of the curriculum, as perceived by the authors, student participants in that class. Specific topics of discussion include: self-directed learning, group function, clinical skills, and the assessment process. Although there was a wide spectrum of opinions on these topics, the authors have attempted to present the consensus of the group. It was the general conclusion that the strengths greatly outweighed the weaknesses of the programme, but there were small areas for improvement throughout the curriculum.

Introduction

This paper is written to give a student perspective of the problem-based learning curriculum (PBLC) at Southern Illinois University School of Medicine (SIUSM). An article describing the structure of the curriculum in detail has been published (Loschen, 1991). In brief, the PBLC is followed by 18 students per year who are selected from students already accepted to SIUSM. Students who express an interest in the PBLC undergo an additional set of interviews to determine which students understand and are comfortable with problem-based learning (PBL). The PBLC exists for the first two years only, conducted in parallel with a traditional medical curriculum composed of the balance of students (54). The two curricula merge in the third year with the onset of clinical training.

Reports have been published by students of other PBL curricula (Barbeau et al., 1990), but the goal of this work is to identify successes and failures of the SIUSM programme and to improve the quality of future problem-based learning. An effort was made to provide an honest critique of various components of the curriculum and is meant to improve a successful programme, not to discredit it. To focus on the areas needing improvement would be easy, but it would fail to mention how truly satisfied we are with problem-based learning. Specific topics of discussion include: self-directed learning, group function, clinical skills, and the assessment process.

Requests for reprints should be sent to J. L. Welsh, c/o Julie Robbs, Southern Illinois University, School of Medicine, P.O. Box 19230 , Springfield, IL 62794-9230, United States of America.

Self-Directed Learning

For all practising physicians the learning process must continue throughout their careers as medical science advances. Thus, independent learning is a vital skill that every physician must develop. Unfortunately, this skill is often taken for granted. PBLC offers an excellent environment for learning because students learn in the same way they will learn for the rest of their professional careers.

As these students began their medical education, there were expectations that the PBL style curriculum would afford them freedom and flexibility as they learned. Although there were quite a few unknowns for students pioneering a young curriculum*, they expected the process to be more enjoyable than the regimented approach typically used in medical education. Students did not fully understand how this curriculum would work, how they would be assessed and whether the programme would meet their own individual goals. In essence, a great deal of faith was necessary to remain focused in the early months of the first year of medical school.

A number of resources were available to the students after confronting a case including texts, journal articles, Medline searches, laboratory sessions, optional lectures from the standard track, human resources, and material gained from group experiences. Most students developed a preference for certain types of resources and tended to use them often.

The use of human resources involved anyone who had information that could help the student work through learning issues, including clinical staff, basic science teachers, social workers, and psychologists. For example, one student was very interested in the case of a Jehovah's Witness patient and obtained information on treatment from a minister. Human resources were useful, but after a student had prepared for the encounter, the student's questions were often already answered. During the second year, the human resources tended to be clinicians, rather than basic science staff, as students had more contact with them. In general, the laboratory experiences in anatomy, histology, microbiology, and pathology were more directive, rather than the strict problem-based approach used in tutor groups.

The ideal process of self-directed learning involves case confrontation, identification of learning issues, developing an appropriate strategy to address those issues, information gathering, and finally sharing information with the group. The implementation of this approach varied as students had different styles and goals, and at times the number of learning issues forced a student to focus on topics of perceived importance. Styles ranged from the independent learner to the group-orientated student; goals of the students included lifelong learning, subjects of personal interest, and short-term goals, such as preparation for national board examinations.

In retrospect, PBL was an effective way to learn the core knowledge acquired in the first two years of medical school. In the beginning, students found it difficult to believe that patient cases could highlight all the material normally covered in the first two years of medical school. However, at the end of the second year, most students felt well prepared for the next year. The programme definitely forced students to take responsibility for learning, a new concept for some. Most importantly, students developed a self-directed learning style, important for their future professional use.

Group Function

Group function is at the heart of the PBL format. Without proper group function, the programme rapidly becomes a self-study programme and loses many of the potential advantages of a PBL curriculum, including clinical reasoning, symbiotic learning, and peer assessment. Several factors, discussed below, affected the ability of the group to perform at its best.

One unexpected area of difficulty for many students was the reality of working closely with their fellow students for two years. Many students had previously studied in the relative anonymity of hallowed lecture halls, and were not forced to depend on other students for educational or emotional support. Furthermore, most students were not accustomed to giving constructive criticism to their peers. Working in a group with six people, all of whom have different relationships can be disruptive and counterproductive at times. In the best groups, information was shared freely, students learned from one another, and helpful advice on improvement was abundant. This was the standard that tutor groups hoped to achieve. Like all else in life, however, people don't always get along, and many tutor groups struggled to find some common ground where everyone was free to learn.

Building a working relationship with peers tended to follow one of three basic paths. Ideally, students built a relationship based on trust, giving each other valid criticism and truly learning from one another. Another possible scenario was the "mutual non-aggression pact." In this situation students trusted each other not to give constructive criticism, making learning from each other difficult because of the lack of feedback. The last and most unfavourable option involved open distrust, and at times dislike, with plenty of criticism given, some valid and some invalid. Fortunately, the last scenario was rare.

As students progressed, individual goals often surfaced. It seemed that students could be grouped into those motivated by national board examinations and those motivated by the future clinical usefulness of the information. In addition, students also varied in their trust of the programme to fulfill these goals. When individual goals strayed widely from the course that the group was taking, group performance suffered. The best learning situations usually arose when all students had a common goal and worked as a team to master the material. Unfortunately at times, a dichotomous situation would surface and nobody benefited. Usually either the group or the tutor would identify the problem and take steps to alleviate the lack of common direction.

Individual goals and interests were often very useful to the overall performance of the group. Certain students became known for an interest in a specific area and would become resources for the group. It should not be surprising that individuality would be prominent in students involved in the PBLC. The key was to use the unique traits of each student.

Usually a student would share with the group information obtained from previous study. Because of time restraints, all learning issues cannot be studied in detail, so certain students may agree to look farther into key issues. At the beginning of the programme trust abounded, and this type of cooperative learning happened almost spontaneously. As time passed, students became more independent of the PBL group and cooperative learning occurred more often in small study groups. With this shift, the PBL group process suffered at times, forcing students to attempt to cover all the learning issues. As a result, some issues were covered superficially. At these times, it was beneficial to have the tutor assign responsibility for key learning issues and follow up with student directed discussions of those topics.

Ideally, following every other case, students would evaluate each other and the tutor on performance observed in group meetings. Used regularly and properly, these sessions lead to improved group relations and better performance by the group. Unfortunately, the ability to give and receive constructive criticism is not innate or easily learned. One informal session on how to give and receive criticism was given early on. However, more sessions were needed to develop these useful skills.

The impact of the tutor on the group was tremendous and produced a wide range of learning experiences. It is beyond the scope of this paper to fully discuss the ideal tutor (Barrows, 1988). Table I delineates positive tutorial styles affecting group function observed during time spent in the PBL programme.

It was not always easy for the tutor to achieve these skills, and many tutors had a mix of these skills. When the tutor's role is played appropriately, students know what they need to learn and are personally motivated to learn. It was very important for tutors to take their position seriously, as they are responsible for the group. Students could tell who had taken the tutor training seriously, as these tutors made a definite effort to remain open-minded and non-judgmental, encouraging the free flow of information and acting more as a referee than as an instructor. When a tutor would usurp the group process and fall into a lecture mode, the group would often respond with silence following the tutor's comments, and spontaneous interaction would take time to reoccur, if at all.

It was recommended by PBLC students that fourth-year medical students who had been involved with the PBLC be considered as possible tutors for future PBL students. The senior students should be familiar with the attributes of an ideal tutor and would also benefit from a review of the basic sciences which the second-year students would be covering.

This recommendation has been implemented.

Table I. Tutor characteristics

Positive Traits	**Example or Definition**
Non-directive	Allows students to determine the course of investigation
Supportive questioning	"What kinds of hypotheses does this new information bring to mind?"
Encouraging attitude	Supports correct clinical reasoning, building students' confidence.
Drawing out quiet student	Resists the urge to only recognise vocal members of the group, but asks stimulating questions of quiet members.
Periodically provides valid feedback	Following each case discussion provides objective critical feedback

Clinical Skills And Experiences

Early acquisition of clinical skills is an essential component of PBL at SIUSM. Access to patients at the onset of students' medical education is extremely beneficial for several reasons. First, it provides students with an opportunity to develop their clinical reasoning skills. It also gives students a glimpse of their future life as a practising physician. Lastly, clinical exposure both reinforces what is learned in the tutor group and adds excitement to the first two years of medical education.

Students began assimilating clinical skills in the first week of their first year. Many felt this early patient access to be a fundamental part of their early training. Over two-thirds of the students were unaccustomed to dealing with patients and began at "ground zero." The introductory session consisted of an informal discussion of the techniques of the general physical examination led by an experienced clinician. Later in the first year students had special sessions with physicians to learn specific components of history taking or physical examination, such as the pelvic examination. Students often gathered in informal groups to practice physical examination skills. Standardised patients provided another arena for students to hone their clinical skills, and provided time for patients, as well as physician observers to give feedback to the students on their performance. Students could request instruction on performing components of the physical examination, but this became impractical because of scheduling conflicts with local physicians. In general, organised formal training on how to perform specific physical examinations and difficult areas of the patient's history (e.g., alcohol and drug history) was lacking, and students were expected to learn most of these skills during their clinical experiences and standardised patient encounters.

Standardised patients (SP), actors who "perform" medical problems in a teaching situation or patients who actually have a disease process, were a key part of the students' medical education in the PBL curriculum. Throughout both years of the programme, standardised patients were designed to help the students learn to deal with both medical and psychosocial problems. Standardised patients were often used in a group setting, where one student would take charge for a few minutes and then hand over to another student. This format allowed for students to observe each other in action and to correct mistakes in technique in a learning environment. Standardised patients were also used in the assessment process with the same goals in mind. Overall, most students felt standardised patients to be a valuable experience; they allowed them to improve their clinical skills in a non-threatening environment. In fact, some students would have preferred to have more standardised patients at their disposal.

Students were expected to participate in clinical work for a minimum of one-half day per week with a physician in the community. Most students found these experiences to be the highlight of the curriculum. After all, first-year students dream that they will be seeing patients at the beginning of medical school, but none actually believe that this will happen. By allowing students to see patients from day one, students come to know the excitement and responsibility of taking care of patients' needs, both medical and psychological. Students also discover early on whether they have made the right or wrong career choice. Unfortunately, these experiences were highly variable, depending primarily on the disposition of the physician and the industriousness of the student. For example, several ambitious students who were fortunate enough to have physician preceptors, who were interested in teaching, were helping deliver babies by the end of their first year of medical school. At the other end of the spectrum, on reaching the second year of the programme these same students were unable to find preceptors willing to spend more than 4 hours every other week with them in the clinic. This variability is highly undesirable because the development of a student's clinical skills depends on the quality of these clinical experiences. Overall, however, these clinical experiences were invaluable.

Assessment and Evaluation

The assessment system plays several important roles including personal feedback, student progress, and curriculum evaluation. Because of the newness of the PBLC, the process constantly changed throughout the two years of the programme. Students were thus exposed to a wide variety of examination techniques including standardised patients, clinical reasoning tests, multiple-choice basic science questions, computerised patient tests, and oral examinations. It should be noted that progression of students in the programme was based solely upon tutor group assessments, and all other examinations were said to be for student feedback.

Tutor group assessment took place at the end of each unit and covered: knowledge, interpersonal skills and cultural sensitivity, self-directed learning ability, and clinical reasoning. Each student was assessed individually on each area by group members and the tutor before a consensus was formed and recorded. This process was based upon the perception that group members and the tutor have the best knowledge of a student's abilities. The exercise was considered to be the sole determinant of a student's progress, as well as serving as feedback to the student. This group assessment usually worked well, and the group supported its members with valid criticism. Unfortunately, at times, students placed in the position of determining their peers' academic future felt excessive pressure to be cautious with negative criticism. This was especially true when the student assessor would soon become the student to be assessed. The formation of a "mutual non-aggression pact" could not only circumvent the assessment process, but destroy useful feedback to the student. It was therefore felt that the group assessment should form only a part of the assessment, with additional recorded input from examinations.

The examinations that typically followed a six- to ten-week unit were generally helpful, with both positive and negative features. The format would include: four standardised patients (SP), a clinical reasoning test based on each SP, and a basic science test also related to each SP case.

The standardised patients and the clinical reasoning tests were generally excellent experiences, both for feedback and as new learning experiences. The basic science tests were variable, as instructors from the traditional curriculum often supplied questions that were orientated more to rote memorisation than to the conceptual learning that took place in the PBLC. A suggestion for future classes would have tutors and previous PBLC students forming a test review board to screen examinations. Other suggestions for improvements included incorporation of self-directed learning and write-ups into the examination format, in order to prepare the students better for the clinical years and for life as a continually learning physician.

Conclusion

The majority of students participating in problem-based learning at SIUSM were satisfied with the education and training received during this two year programme. Many students felt that PBL made the transition to the clinical years of training much easier, because the students had already developed a self-directed learning strategy that they could use for the rest of their professional life.

Group function was extremely variable. Individual goals, the mix of students in a particular group, the training and outlook of the tutor, and all participants' collective willingness to create a satisfactory learning environment had an impact on the success. One of the biggest strengths of the PBLC at SIUSM was that it stressed early clinical exposure, enhancing students' learning and making medical school more enjoyable. Students' generally felt that the assessment process was the least satisfactory portion of their experience in the PBLC. Both formal examinations and group assessment were felt to need revision.

The academics were very receptive to student concerns about the curriculum and took action to implement students' suggestions. In the opinion of the authors and the majority of students the curriculum met their individual goals successfully, and they were well prepared for the completion of their medical training.

References

Barbeau D,. Quesnel, J., & Des Marchais, J. (1990). Students' perceptions after one year of problem-based learning at Sherbrooke. *Annals of Community-Oriented Education, 3(1),* 25-33. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Barrows, H.S. (1988). *The tutorial process* (revised ed.). Springfield, IL: Southern Illinois University, School of Medicine.

Loschen, E.L. (1991). PBLC: An alternate curriculum for the basic sciences. *Educaçao Medica, 2(2),* 14-20.

Annals of Community-Oriented Education
1994, Vol. 7, 267-286

Objectives Generated Separately by Staff and Students in Problem-Based Learning

S.A. West
The University of the West Indies
Trinidad, West Indies

Abstract

The first batch of students at the new Faculty of Medical Sciences at the University of the West Indies, St. Augustine had six months of introductory lectures followed by two years of problem based learning. This study was undertaken to compare the quality and quantity of learning objectives generated by the students during their "brainstorming" with those given by the problem developers.

Six of the thirteen blocks were randomly selected and the objectives of both problem developers and students were classified first by subject area in basic sciences, i.e. Anatomy, Biochemistry, Community Health, Pathology, Pharmacology and Physiology; then into the domains of Bloom's taxonomy of educational objectives (the cognitive and affective domains only, as the psychomotor objectives were dealt with in the skills laboratory). The blocks were Nutrition, Digestion and Metabolism; Kidney and Homeostasis; Endocrine; Respiration; Musculo-skeletal and Central Nervous System.

Except in the block on respiration, the students generated more learning objectives than the problem developers. They produced more recall, comprehension and application objectives, but fewer analysis, evaluation and affective objectives.

Students matched problem developers in both quantity and quality of learning objectives, as well as producing other objectives of their own interest. Therefore, in terms of learning objectives, problem-based learning may be considered an efficient approach to learning.

Introduction

The new Faculty of Medical Sciences at The University of the West Indies, St. Augustine introduced its first cohort of students to problem-based learning in March 1990 after six months of introductory lectures. The staff and students were all new to problem-based learning (PBL). All teachers had been introduced to this strategy in workshops, at home and abroad, but none had actually used it in a teaching situation. There was a great deal of apprehension whether the students would learn all that was required.
The students - medical, dental and veterinary - completed a common Year 1 programme,

---

Requests for reprints should be sent to S.A. West, The University of the West Indies, Faculty of Medical Sciences, Centre for Medical Sciences Education, St. Agustine, Trinidad, West Indies.

and the medical and dental students undertook a common PBL programme for the additional two years in their Phase I programme. Before starting the PBL blocks students attended a one day "Introduction to PBL" workshop, organised by the Centre for Medical Sciences Education. This workshop consisted of a general presentation on new trends in Medical Education, a background of the principles of educational psychology underlying PBL, a description of the PBL process, a presentation on the role of the tutor, and principles of small group interaction. The students were randomly divided into groups and given a problem in order to go through the PBL process with a staff tutor.

Problem-Based Learning at St. Augustine

We used the seven PBL steps practised by the University of Limburg in Maastricht (Schmidt, 1983). In the first PBL session: 1) clarify terms or concepts not easily understood; 2) define the problem; 3) analyse the problem to identify the issues in the problem; 4) draw up a list of possible explanations or hypotheses; 5) formulate learning objectives. Students have at least two days for step 6: collect additional information to satisfy the learning objectives using available resources including resource persons. Step 7: present what has been learned and relate it to an understanding of the problem takes place in the second Session. Each session lasts three hours.

Problem-based learning in Phase I is divided into thirteen blocks, each with an average of ten problems (West, 1992). The students were given block books with a list of the general objectives for the block. In the small groups the students generate their own specific objectives in relation to the current problem. Although the tutor's booklet contained the specific objectives for each problem as defined by the problem developers, these objectives were not given to the students. These objectives were used by the tutor to ensure that the students are focusing on the problem and block objectives. The specific objectives, generated and agreed by the students during their first session, were then studied by them before the second session. While there was usually general agreement on the objectives, this did not prevent a student from pursuing an objective which interested him/her in addition to the group's objectives.

The PBL groups were selected at random by the Vice-Dean Pre-clinical Division. The majority of students came directly from secondary school, however there were a small number with degrees. The male students (57) outnumbered the females (32), but the groups were usually mixed. While the tutor was changed after each block the groups remained together for two blocks.

This study was undertaken to compared the quality of objectives generated by the students during their "brainstorming" with those given by the developers of the problems. Six of the thirteen blocks were randomly selected for the study:
Nutrition, Digestion & Metabolism - 9 weeks, 18 problems; Kidney and Homeostasis - 6 weeks, 12 problems; Endocrine - 6 weeks, 10 problems; Respiration - 5 weeks, 8 problems;

Musculo-skeletal & Locomotion - 6 weeks, 11 problems; Central Nervous System - 6 weeks, 11 problems. Each block had general objectives, both cognitive and psychomotor, listed in both tutors' and students' booklets. Objectives for each problem were only listed in the tutors' booklets.

Why PBL?

In outlining some principles of adult learning Brundage and Mackeracher (1980) emphasized that "the past experience the adult learner brings to a learning activity is both a helpful resource and a potential hindrance" and "the learner must be an active participant." Other research (e.g. Entwistle, 1983) has shown that adults benefit from cumulative learning and from learning based on answering their own questions, integrating aspects from different areas of their knowledge as they relate to the situation/problem/question they wish to resolve. Rapid feedback on the success of their learning and applying new knowledge by transfer to a real life situation are also important factors. PBL tries to address all these factors.

Engel (1992) indicated that in addition students also benefit from practising other skills in PBL, including listening in order to compare their own understanding with that of their peers, summarising the outcome of what they elected to study, teaching others, how to correct each other constructively, and how to ask for supplementary information in a non-threatening fashion.

Newble and Clarke (1986) stated that students following a PBL curriculum demonstrated significantly deeper learning and less surface learning.

On the whole, research has found that students' evaluation of their PBL curriculum has been uniformly favourable (Barbeau et al., 1990). Woodward and Ferrier (1986) reported a high level of satisfaction with their medical education by students at McMaster, a PBL medical school. The students did not feel that they omitted to study any significant information. However, it has been observed that careful induction to the use of PBL and to learning groups is essential (Wallis and Mitchell, 1985). At St. Augustine we have tried to follow these guide lines.

Method

As part of the on-going evaluation process of the new curriculum the students were given a questionnaire during the problem-based learning sessions (Appendix). Among other things, they were required to state the learning objectives which their group had generated for each problem. There were thirteen groups with an average of seven students in each group. For each problem one questionnaire should have been returned by each group (Table I). The interest of the tutor seemed to make a difference in the return of the questionnaires. The six blocks that were used in the study had a greater than seventy five percent return of the questionnaire. The objectives stated by the problem developers and the students for each problem were classified, first by subject - Anatomy, Biochemistry, Pathology, Pharmacology, Physiology and Community Health - and then by domains and classes using Bloom's taxonomy (1979). This classification was checked independently by another science educator. Necessary adjustments were agreed. The objectives generated by the students were compared with those of the developers of the problem.

Results

In each block, except respiration, the students generated more cognitive objectives than the problem developers (Table II/IV). The problem developers listed three objectives in the affective domain, all in the Central Nervous System. The students generated only two objectives in this domain, one in the Endocrine and the Central Nervous Systems respectively. There were no objectives in the psychomotor domain because these were delt with in the skills laboratory.

Overall, the problem developers listed their highest number of objectives at the level of comprehension (51%), followed by recall (32%), and application 16% (Table III). The students also generated their highest number of objectives at the level of comprehension (45%), followed by recall (36%), and application (18%). These differences were not statistically significant. However, the students had a lower percentage of comprehension objectives, but a higher percentage of recall and application objectives (Table IV).

Overall, the students generated more cognitive objectives in each subject area than the problem developers (Tables IV and V). The students generated more recall objectives than the problem developers but the same number of comprehension objectives. The problem developers listed an objective at the evaluation level in Pharmacology in the Musculo-skeletal block, but this was not generated by the students. In Physiology, the problem developers listed two analysis objectives while the students generated only one.

Figures 1 to 12 show the breakdown of the cognitive objectives listed by the problem developers and generated by the students for each block. Figures 13 and 14 show the number of cognitive objectives for the problem developers and students by subject area for all the blocks combine. Figure 15 shows the total number of objectives by both problem developers and students by subject area, while Figure 16 shows the total number of objectives by problem developers and students by classification.

The objectives generated by the students compared favourably with those of the problem developers. For example, Problem 7 in the Musculo-Skeletal block was:

> No smile at a business conference
>
> A middle aged Trinidadian businessman went to London to attend a conference. On leaving his hotel he could not avoid the impact of the chilling wind on his face. The next morning when he looked in the mirror his face looked crooked. He could not close his right eye and water from his tooth mug dribbled from the corner of his mouth. He recalled a similar problem with fluid dribbling from his mouth after a mandibular nerve block by his dentist.

Table I. Responses to questionnaire on the problems

Block	No. of Problems	No. of Questionnaires Returned per. Problem	Total returned	(Total distributed)	% Response rate
Nutrition, Digestion and Metabolism	18	10/11/12/10/13/10/9/11/12 13/12/10/12/13/13/10/9/13	190	(234)	81.2
Kidney and Homeostasis	12	13/10/11/12/10/11/10/11 0/10/12/12	131	(156)	84
Endocrine	10	12/10/9/11/11/12/11/10/9/9	104	(130)	80
Musculo-skeletal	11	10/9/9/11/10/12/10/9/9/9/10	108	(143)	75.5
Central nervous system	11	9/9/9/10/11/11/11/9/10/9/10	108	(143)	75.5

Table II. Number of cognitive objectives generated in the blocks by subject areas

Block		**Anatomy**	**Biochemistry**	**Pathology**	**Pharmacology**	**Physiology**	**Community Health**	**Total**
Nutrition, Digestion and Metabolism	Prob. Dev.	7	15	32	5	21	11	91
	Students	13	17	85	5	37	21	179
Kidney and Homeostasis	Prob. Dev.	5	14	14	4	18	-	55
	Students	10	23	25	7	32	-	97
Endocrine	Prob. Dev.	10	17	9	1	21	-	58
	Students	14	29	27	4	26	1	101
Respiratory	Prob. Dev.	3	10	7	9	27	-	56
	Students	4	8	5	14	21	-	52
Musculo-Skeletal	Prob. Dev.	20	3	13	7	4	-	47
	Students	20	3	22	8	6	-	59
Central nervous system	Prob. Dev.	13	7	18	7	12	1	58
	Students	21	14	30	11	13	1	90

Prob.Dev. = Problem Developers

Table III. Summary ofcClassification of problem developers' and students' objectives using Bloom's taxonomy

Problem Developers

Recall	**Comprehension**	**Application**	**Analysis**	**Evaluation**	**Affective**	**Total**
116	187	59	2	1	3	368
32%	51%	16%	.5%	.3%	.8%	100%

Students

Recall	Comprehension	Application	Analysis	Evaluation	Affective	Total
207	262	106	1	-	2	578
36%	45%	18%	.2%	-	.3%	100%

Table IV. Classification of objectives specified by problem developers

Block	Anatomy	Biochemistry	Pathology	Pharmacology	Physiology	Community Health
Nutrition, Digestion and Metabolism	6R+1C	3R+8C+4A	6R+14C+12A	3R+1C+1A	14C+6A+1Ana	1R+7C+3A
Kidney and Homeostasis	2R+3C	1R+12C+1A	3R+10C+1A	3C+1A	2R+15C+1A	-
Endocrine	5R+5C	7R+7C+3A	1R+7C+1A	1C	8R+11C+4A	-
Respiratory	3R	3R+6C+1A	2R+5C	4R+5C	12R+11C+4A	-
Musculo-Skeletal	16R+4C	2R+1C	5R+5C+3A	2R+3C+1A+1E	3R+1C	-
Central Nervous System	9R+4C	4C+3A	3R+10C+5A	3C+4A	4R+5C+2A+1Ana	1C
Total	41R+17C	16R+38C+12A	20R+51C+22A	9R+16C+7A+1E	29R+57C+15A+2Ana	1R+8C+3A
	58 (16%)	66 (18%)	93(25%)	33 (9%)	103 (28%)	12 (3%)

R= Recall C=Comprehension A= Application Ana=Analysis E=Evaluation

Table V. Classification of objectives generated by students

Block	Anatomy	Biochemistry	Pathology	Pharmacology	Physiology	Community Health
Nutrition, Digestion and Metabolism	11R+2C	4R+8C+5A	22R+32C+31A	3R+1C+1A	3R+23C+10A+1Ana	3R+12C+6A
Kidney and Homeostasis	6R+4C	4R+18C+1A	6R+16C+3A	1R+5C+1A	2R+26C+4A	-
Endocrine	9R+4C+1A	16R+10C+3A	6R+15C+6A	1R+3C	10R+14C+2A	1R
Respiratory	2R+2C	5R+2C+1A	5C	9R+5C	11R+7C+3A	-
Musculo-skeletal	17R+3C	2R+1C	9R+7C+6A	4R+3C+1A	4R+1C+1A	-
Central nervous system	19R+2C	2R+8C+2A	7R+13C+10A	1R+5C+5A	6R+4C+3A	1R
Total	64R+17C+1A	33R+47C+12A	50R+88C+56A	19R+22C+8A	36R+75C+23A+1Ana	5R+12C+6A
	82 (14%)	92 (16%)	194 (34%)	49 (8%)	135 (24%)	23 (4%)

R= Recall C=Comprehension A= Application Ana=Analysis E=Evaluation

The objectives stated by the problem developers were:

1. review the muscles of facial expression
2. know the innervation of the muscles of facial expression, motor and sensory
3. know the origin, course and distribution of the facial nerve
4. know the origin, course and distribution of the trigeminal nerve.

In addition to the above objectives the students generated the following:

a) differentiate between upper and lower motor lesions with respect to the facial nerve;
b) pathology of Bell's Palsy;
c) methods of testing of facial and trigeminal nerves;
d) pharmacology of local anasthetics;
e) treatment of the condition.

Discussion and Conclusion

In some instances students failed to generated specific objectives listed by the problem developers (West, 1992). However, the students generated more objectives overall than the problem developers. This would indicate that the students were guided by both the problem and their own interests. At the time of the brainstorming the students were not aware of the objectives of the problems. They would, therefore, focus on what interested them in the problems, bearing in mind the title of the block and the need to learn the basic sciences. While these learning objectives may not be the same as those of the problem developers, the students were able to make up for missed objectives. West (1992) found that there was no significant difference in the performance of students in the examinations related to objectives that all the groups had generated and those that all the groups had missed.

The students were able to generated objectives comparable in classification, in both subject areas and Bloom's taxonomy, to those of the problem developers. They were, therefore, able to "cover" the basic sciences both in quantity and quality. There did not seem to be an improvement in the number and quality of the objectives generated by the students as they progressed through the year. This indicated that the students mastered the process of problem-based learning quickly, and that their objectives depended on the subject matter of the problems and the block and not on experience.

Barrows and Tamblyn (1980) stated that one of several concerns that "often weaken the perceived value of problem-based learning" is "the feeling that this method stresses the clinical concepts of patient evaluation and management, to the detriment of learning basic sciences". The present study indicates that this is not the case, because students generated more objectives in the basic sciences than the problem developers, pointing to the fact that students were also interested in the basic science explanations of the phenomena described in the problems.

Another commonly expressed concern, cited by Barrows and Tamblyn (1980), is "this method seems to stress problem solving skills and not the acquisition of knowledge or facts". This study supports Barrows' contention that if properly orientated and guided by the medical teacher, students can learn basic or clinical science in any area in any depth. Our students were able to work through the problems identifying the underlying anatomical, biochemical, or physiological mechanisms involved in the problem.

References

Barrows, H.S., & Tamblyn, R.M. (1980). *Problem-based leaning: An approach to medical education.* New York, NY: Springer Publishing.

Barbeau, D., Quesnel, J., & Des Marchais, B. (1980). Students' perceptions after one year of problem-based learning at Sherbrooke. *Annals of Community-Oriented Education 3,* 25-33. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Bloom, B.S (1979).Taxonomy of educational objectives. Book 1. Cognitive domain. London, UK: Longmans Group Ltd.

Brundage, D.H., & Mackeracher, D. (1980). *Adult learning principles and their application to programme planning.* Toronto, Ontario: Ministry of Education.

Eagle, C., Jennet, P., & Mandin, H. (1992). Learning issues identified using standardised patients in a problem-based learning course. *Annals of Community-Oriented Education 5,* 269-280. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Engel, C.E. (1992). Not just a method but a way of learning. In: D. Bond, & G. Feletti (Eds.). *The challenge of problem-based learning.* London, United Kingdom: Kogan Page.

Entwistle, N. (1983). *Styles of learning and teaching.* Chichester, United Kingdom: John Wiley.

Newble, D. I., & Clarke, R. M. (1986). The approach to learning of students in a traditional and an innovative problem-based medical school. *Journal of Medical Education, 20,* 267-273.

Schmidt, H. (1983). Problem-based learning: Rationale and description. *Journal of Medical Education, 17,* 11-16.

Wallis, B., & Mitchell, K. (1985). The teaching of group process skills as a basis for problem-based learning small task-oriented groups. In: D. Boud (Ed.). *Problem-based learning in education for the professions..* Kennington, Australia:*HERDSA*, University of New South Wales.

West, S.A. (1992). An analysis of the performance of students on problems in the phase I programme of the Faculty of Medical Sciences, The University of the West Indies. In: R.M. Harden, I.R. Hart, & H. Mulholland. *International conference proceedings : Approaches to the assessment of clinical competence, part 1,* 356-363. Dundee, United Kingdom: University of Dundee.

Woodward, C.A., & Ferrier, B.M. (1986). McMaster university graduates. *Journal of Medical Education, 61,* 859-860.

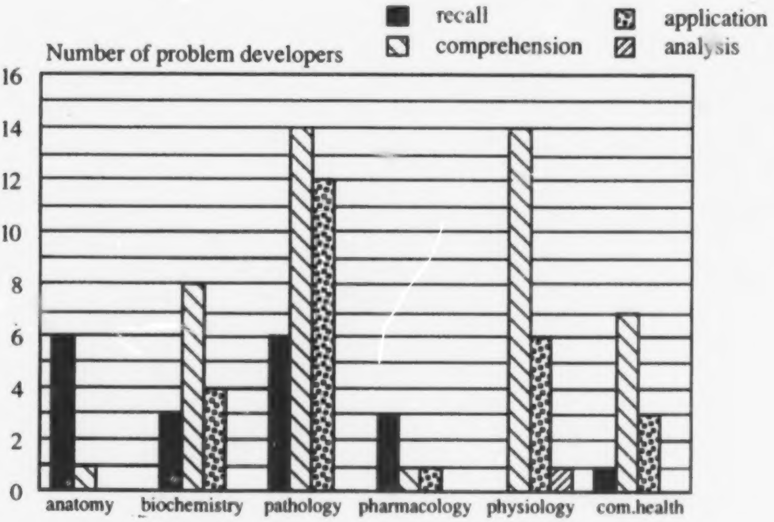


Figure 1. Classification of objectives by problem developers: Nutrition, digestion and metabolism

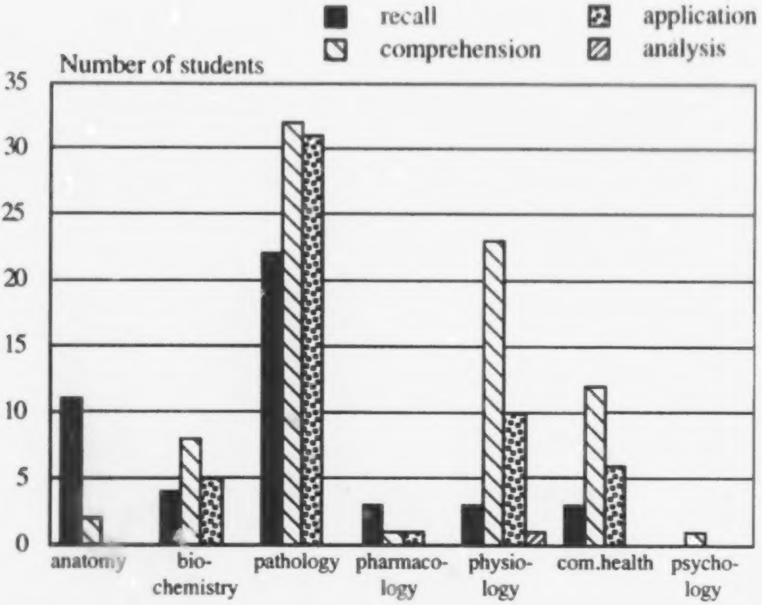


Figure 2. Classification of objectives by students: Nutrition, digestion and metabolism

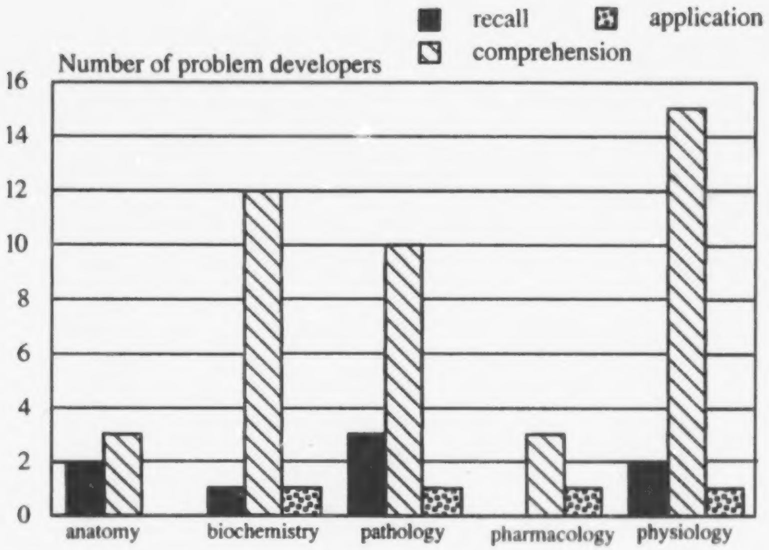


Figure 3. Classification of objectives by problem developers: Kidney and homeostasis

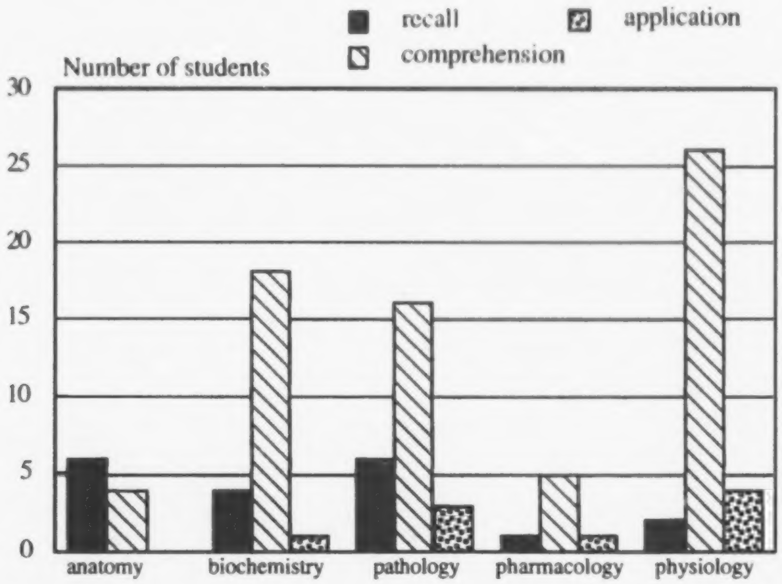


Figure 4. Classification of objectives by students: Kidney and homeostasis

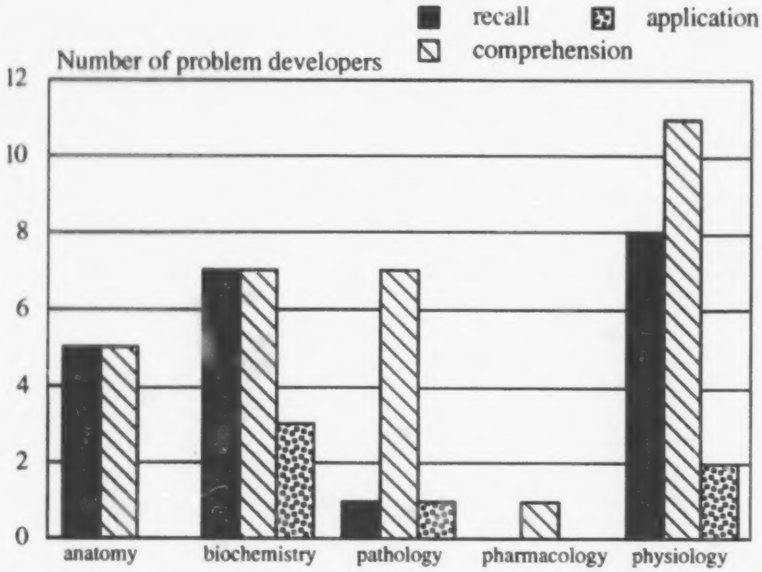


Figure 5. Classification of objectives by problem developers: Endocrine

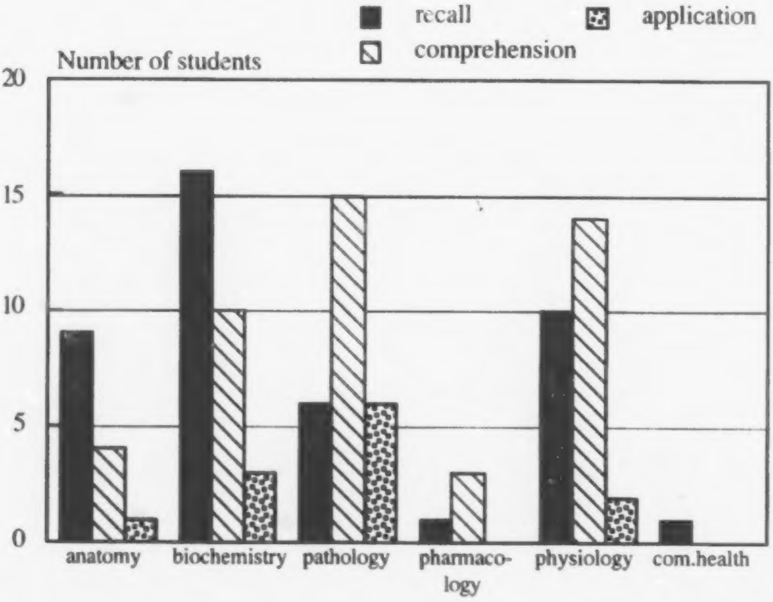


Figure 6. Classification of objectives by students: Endocrine

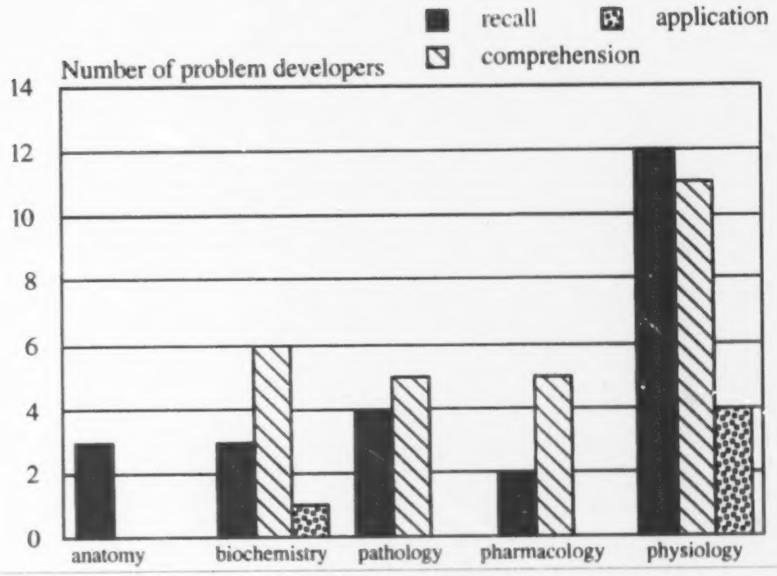


Figure 7. Classification of objectives by problem developers: Respiration

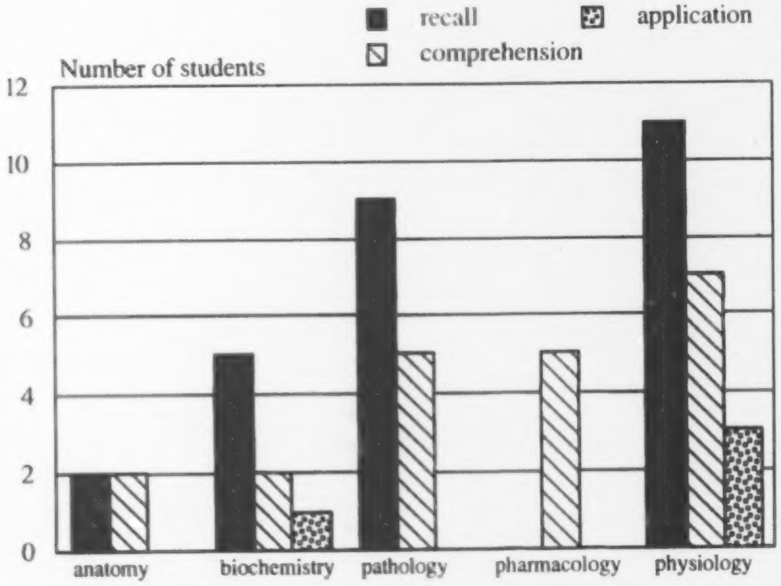


Figure 8. Classification of objectives by students: Respiration

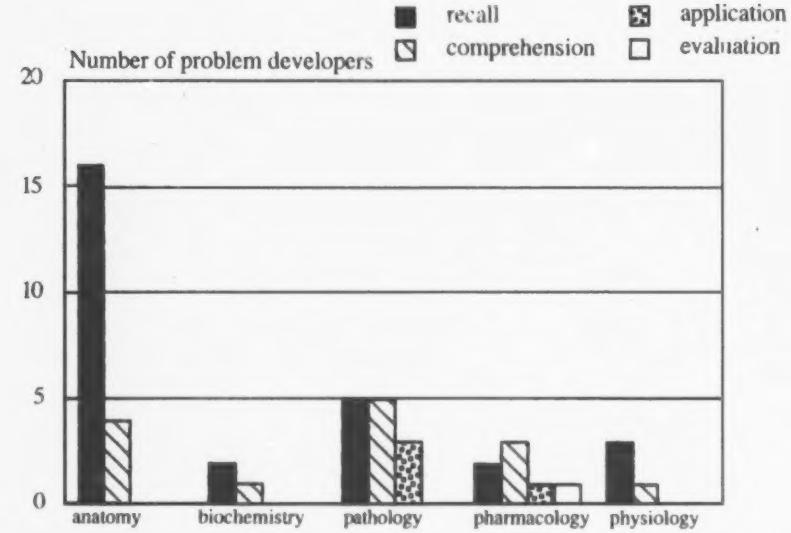


Figure 9. Classification of objectives by problem developers: Musculo-skeletal

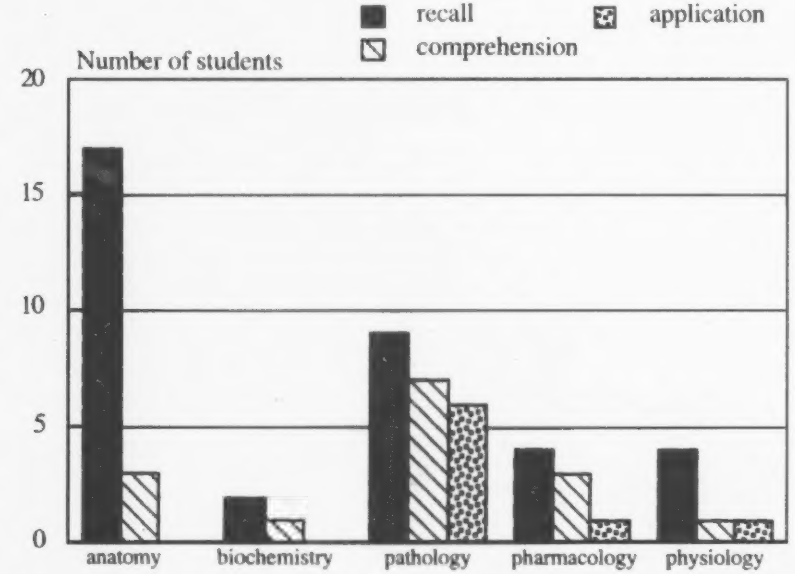


Figure 10. Classification of objectives by students: Musculo-skeletal

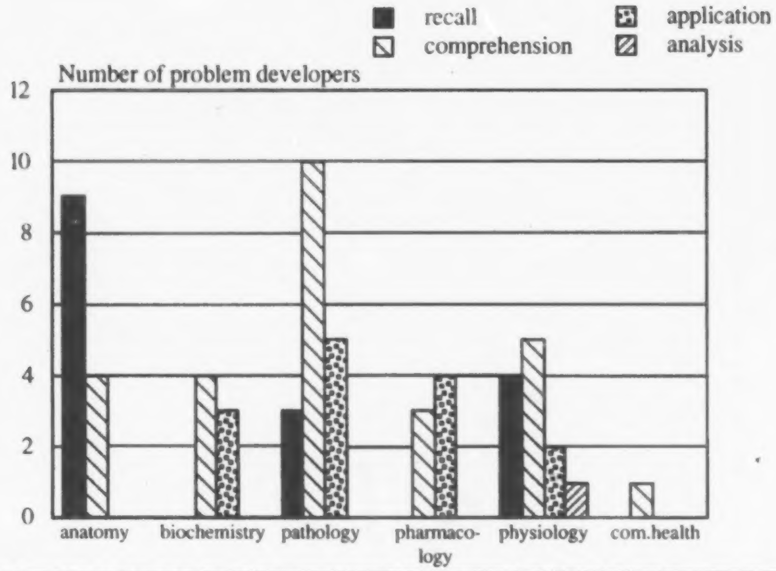


Figure 11. Classification of objectives by problem developers: Central nervous system

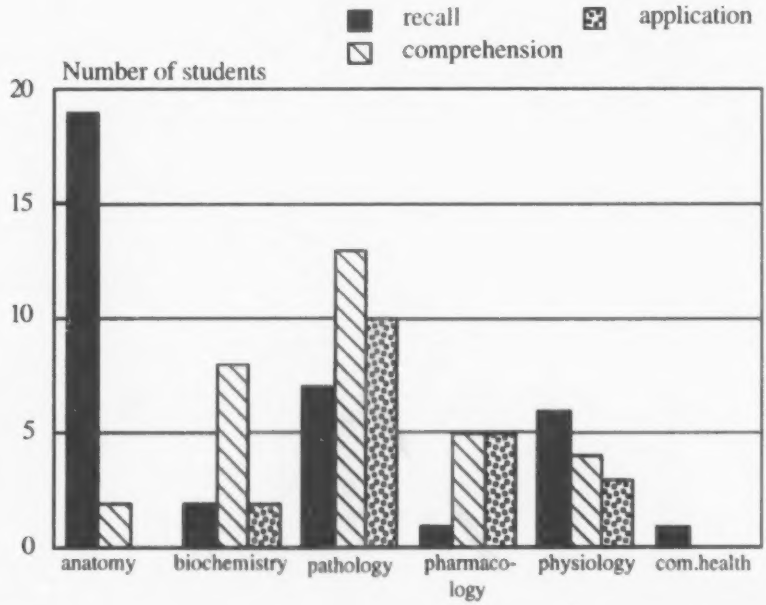


Figure 12. Classification of objectives by students: Central nervous system

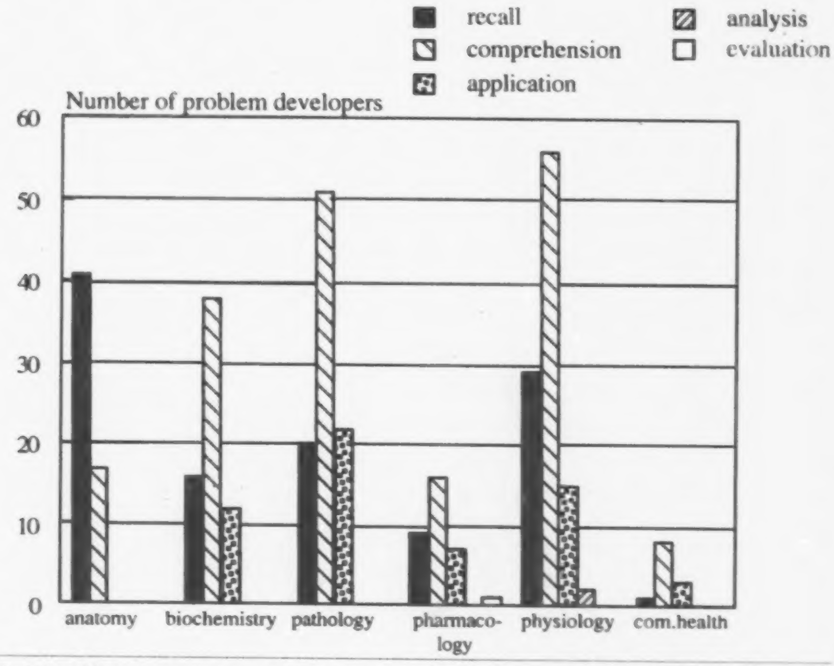


Figure 13. Classification of objectives by problem developers for all six blocks

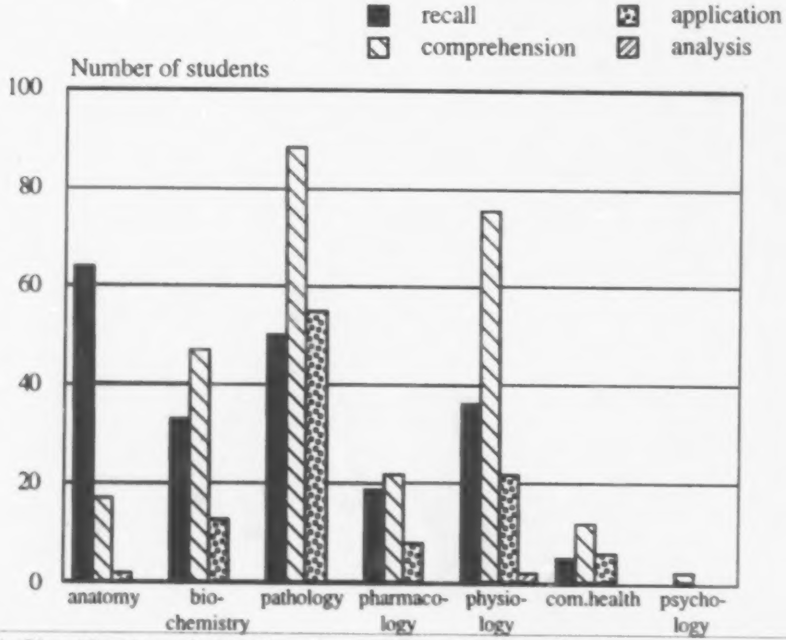


Figure 14. Classification of objectives by students for all six blocks

APPENDIX

Centre for Medical Sciences Education
Faculty of Medical Sciences
The University of The West Indies
St. Augustine

PROBLEM-BASED LEARNING/PHASE I

STUDENT EVALUATION OF PROBLEMS
TO BE COMPLETED BY A STUDENT ON BEHALF OF THE GROUP

Please complete this questionnaire on behalf of your group. Your cooperation is required to enable us to determine the suitability of the problems. Your response will be kept confidential and will be used only to evaluate the problems.

THEME OF THE BLOCK

TOPIC

PROBLEM NO.

1. How many students were in your group?

2. Do you think this problem was worthwhile?
   Yes ( ) No ( )

3. You have six hours on the timetable for problem-based learning per week, how many of those hours did you take to complete this problem?

4. How many hypotheses (proposed explanations) did the group generate from the problem?

5. List your hypotheses in the space provided below:

6. How many learning objectives did the group agree on for this problem.

7. List your learning objectives in the space provided below:

8. List any other issues discussed that did not form learning objectives:

9. What type of learning resources did the group use in dealing with this problem?
   - ( ) Literature
   - ( ) Audio Visual Aids
   - ( ) Resource Persons
   - ( ) Textbook
   - ( ) Other (please specify)

10 How would you describe the availability of the liberature in the library for this problem?
( ) readily available
( ) available
( ) available with difficulty

11. How would you describe the availability of audio visual aids for this problem?
( ) readily available
( ) available
( ) available with difficulty

12.How would you describe the availability of resource persons for this problem?
( ) readily available
( ) available
( ) available with difficulty

13. How would you describe the level of difficulty of this problem?
( ) very difficult
( ) difficulty
( ) not difficulty

14. How much would you say the group learnt by doing this problem?
( ) a great deal
( ) a fair amount
( ) very little new information

15. id any one in the group want to do further work on the problem?
( ) Yes ( ) No

16.For what type of student does the group think this problem is most suited?
( ) medical
( ) dental
( ) veterinary
( ) all

17. What are some of the difficulties, if any, the group experienced with this problem?

18. Any other comments?

Please return the completed questionnaire to:

The Secretary
Centre for Medical Sciences Education
UWI Faculty of Medical Sciences
Room 109, Building 40
E.W.M.S.C.

Annals of Community-Oriented Education
1994, Vol. 7, 287-292

Problem-Based Learning Experience of an Induction Phase

A.M.M. Roslani
Universiti Sains Malaysia
Kelantan, Malaysia

Abstract

The paper describes how the introductory phase of the medical course was modified during a period of twelve years in an endeavour to strengthen self-directed learning and to prepare the students for their subsequent studies which are based fullly on problem-based learning. The first four 10 week terms are arranged in systems-based blocks. The paper is also concerned with the organisation of educational planning to foster an interdisciplinary integrated course.

Introduction

When I graduated, it was with a sense of relief that I had finally made it, but nagging doubts arose as to whether I was prepared for a professional life. The housemanship period added further doubts. Technically, my undergraduate training proved to be sound, but now patients (some of whom were grandparents) looked to me for advice and counselling. Senior doctors were not easily available for consultations. During my postgraduate studies, it became clear that my undergraduate training had prepared me well for pursuing specialty training. Similar issues highlighted by Mahler (1977), Abrahamson (1978), Maddison (1978) and Dornhorst (1981) became entrenched in my thoughts. Nine years after graduation (a short period!), I was asked to be the Foundation Dean of a new medical school. This was a challenge, very hard to resist. This paper discusses the Phase I (Year I) programme and its development to meet the requirements of a fully fledged problem-based learning (PBL) curriculum in the subsequent years of the medical undergraduate course.

The Process

In July 1979, a target was set for a two year planning period prior to the first intake of students. A three-prongued approach was adopted for curriculum planning, staff recruiting and physical plant. Within six months the strategies were in place. The Board of Studies report (1981) was similar to the McMaster programme for producing undifferentiated physicians (Neufeld and Barrows, 1974). The general objectives were: a) understand the scientific basis of medicine and its application to patient care; b) acquire a satisfactory standard of clinical competence relating to the following parameters: i) be able to interview and obtain a satisfactory case history; ii) perform a physical examination and

Requests for reprints should be sent to A. Roslani, Director of Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia.

carry out simple clinical procedures; iii) be able to diagnose common diseases and acute emergencies, and formulate their solutions which entails the institution of first-line management before referral for specialist treatment whenever necessary iv) acquire satisfactory behavioural and communication skills, necessary for instituting patient management; c) understand and appreciate the social and cultural background of the patient and his environment in formulating a plan of management including long-term management and follow-up; d) understand the broader role and responsibilities of medicine in society, and play the role of leader in the health care team and the community; and e) use the knowledge acquired to pursue continuing medical education.

These objectives, set out as learning outcomes, were consistent with those described by Barrows and Tamblyn (1980). Two workshops (Universiti Sains Malaysia, 1980a, 1980b) were held with participants from within the University and without. Among the issues resolved were: The five-year course was to be divided into three phases (Phase 1 - Year 1), Phase 2 - Years 2 and 3, and Phase 3 - Years 4 and 5).

Components of the above general objectives were to be mastered by the students in the various phases: Phase I - a, b(iv); Phase II - b, (i)(ii), c, d,; and Phase III - c, d and e. This arrangement was to accommodate logistic needs and packaging into blocks and systems, while allowing for sequencing.

Core course content of the various phases could be summarised by the SPICES (Roslani, 1981, 1987a) approach. Phase I was identified to be the introductory phase. The administration and supervision of the programme were managed by the Curriculum Committee and the Phase Chairman (Roslani, 1980).

Educational Background of Students

Students at entry have had thirteen years of education with six years of primary education, five years of secondary education and two years of pre-University/ advanced level education. They have passed four major examinations (1:2:1) and they represent 2 % of those who are eligible for University entrance (Roslani,1980). Education in schools has been guided by syllabi of subjects. The end result is summarised by the author's acronym RULE (Roslani, 1987b) , which refers to :

R - rote learning; U - uninitiated and requiring guidance throughout; L - lecture dependent; and E - examination orientated.

As expressed by Knowles (1975) "real competencies by students in teacher-centred, subject-based learning are to listen attentively, take careful notes, read rapidly with comprehension, predict examination questions, and be able to cram", and to repeat it in the examinations. This attitude was further enhanced by the sociocultural norms where teachers were the know-all and not to be questioned. Even when an occasional student did ask a question, a rebuff by the teacher was seen to be quite in order.

PBL implies student-centred learning and requires maturity and discipline on the part of the student (Barrows and Tamblyn, 1980). The student is assumed to be a responsible and motivated adult (Neufeld and Barrows, 1974) . We had to ask ourselves whether our pre-entry students would meet these requirements and were ready for PBL? Protagonists would throw them in at the deep end, but we wished to ensure success for our innovation. Structured preselection interviews were instituted to evaluate student characteristics. A preliminary presentation at the Network meeting in 1987 (Roslani, 1987) reported that: a) there was consistency between merit listing at the interview and academic performance at entry; b) characteristics such as maturity, innovation, enquiry and being widely read were present in a minority of candidates; c) there was progressive improvement in performance from initial uncertainty to being a positive initiator; d) interpersonal interaction became more general; e) the ability to cope with full PBL in Phase II and attainment of the expected outcomes for independent learning were a landmark achievement based on feedback from independent, external supervisors of electives.

Design of Phase I

A Phase I Sub-Committee was formed under the leadership of the Phase I Coordinator. For each of the blocks a block coordinator was appointed, who prepared and submitted to the Phase I Sub-Committee the details of the time-tables including teaching methods, staffing, and assessment tools. The block coordinators liaised with representatives of the disciplines, and two or more block meetings were held before the tentative time-tables were submitted to the Phase I Sub-Committee for approval. Much interdisciplinary interaction took place during the planning of the blocks. The Phase I Sub-Committee would advise on modifications in the time-tables, so that self-directed learning was emphasized.

The overall aim of Phase I was to lay the foundation of medical sciences, and to enable students to follow the problem-based learning in subsequent years. The main areas covered in Phase I in blocks (for the first year of implementation 1981) were as follows:

1. The normal human
2. Response to injury
3. Injury
4. First aid
5. Epidemiology and statistics
6. Behavioural sciences
7. Drugs and the body

This course content was studied during four terms, each term lasting ten weeks. During the initial implementation most of the objectives of normal structure and function were covered in the first two terms, followed by "injury to the human being" (response to injury) in the next two terms. The time constraint did not allow for the development of PBL. However integrated organ system blocks were taught, rather than the conventional discipline-based teaching. At the same time, Nursing and First Aid provided students with early exposure to patients. Epidemiology and statistics, Behavioral sciences, and Drugs and the body were then applied to the various normal and/or abnormal conditions encountered. The development of PBL for Phase II was completed for implementation in the 1982 /83 session.

An evaluation of Phase I in the following year revealed that : a) normal structure and function was too crammed in Terms 1 and 2, while response to injury had been given two full terms (Terms 3 and 4); b) the potential for better integration between topics had not been fully exploited; and c) self-directed learning had not been given sufficient emphasis.

For the above reasons, the following modifications were made in Phase I :

1. Emphasis on basic normal structure and function.
2. Systems blocks were spread over the four terms, enabling integration of the relevant abnormalities (pathophysiology) into the systems.

The following block rearrangements for 1982 were:

Term 1
1. Cells and tissues
2. Growth and development
3. Blood

Term 2
4. Nervous system
5. Musculosketal system
6. Cardiovascular system

Term 3
7. Respiratory system
8. Gastrointestinal system
9. Nutrition

Term 4
10. Renal
11. Endocrine system
12. Reproductive system
13. Host and environment.

This design has remained essentially the same, but the mode of implementation has seen some modification. The logistics and strategies for the teaching/learning process include: Introduction, usually in the form of a lecture giving an overview of the block and the total block schedule identifying how time was to be used. The sequence of the problems for the block was also arranged. The impementation is best exemplified by the Endocrine Block as it has a multi-system involvement.

Students go to their assigned group of sixteen and are provided with a 'trigger' in the form of a presenting history (of Cushing's Syndrome). A leader is elected to lead the discussion to identify the system likely to be involved. A facilitator (with his tutor guide) sits in the background and listens to the ensuing discussion. Should the trend of the discussion go astray, he would interject and pose relevant issues to the group. The students would discuss and think again.

Having identified the system, the students are then provided with a guide to resources for self-directed learning: books with the chapters and leading questions that require checking. Structured learning units were provided for atanomy, physiology, biochemistry and pathology of the respective systems on a "station" basis as in an Objective Structured Clinical Examination (OSCE). This was carried through the week(s) of the block. Staff are available throughout as a resource.

The groups reassemble at the end of the block to present to the whole class in the presence of facilitators. Through these "seminars'' immediate feedback is provided by peers. Fixed learning modules refer to a comprehensive layout of the block and are available for students to go and review in their own time The process is summarized in table I.

Table I. Example of the learning process in Phase I

Trigger	**Process**	**To achieve**
Cushing's	Guided self-study (Worksheets & audio tapes with slides)	Gross and microscopic anatomy syndrome of adrenal gland
		Synthesis, transport and metabolism of steroid hormones
		Regulation of adrenal steroid hormone secretion
		Pathophysiology of hyper- and hypo-secretion of adrenal hormones
	Anatomy practical and demonstration	Gross and microscopic anatomy of the adrenal cortex
	Lecture on steroid hormones	Synthesis and metabolism of steroid hormones
	Case study (trigger)	Pathophysiology of hypo- and hyper-secretion of adrenal cortical hormones
	Case presentation by students	Development of communication skills
		Remedial instruction by resource persons.

During subsequent years a full set of tape- and slide- programmes was prepared for use by the students for independent study and self-assessment. These programmes were tailored to the Phase I objectives, and students have free access to them during the entire period of two weeks of the endocrine block. Logistic shortcomings do not make it possible to give free access to these materials at other times.

Conclusion

This introductory phase had seen a gradual change over the first twelve years, a change towards providing more opportunity for independent study towards the eventual practice of PBL. These changes were necessary and effective as reflected in the performance of the students in Phase II (completely PBL) and students' attainment in the summative assessment. However, students performance in the summative examinations indicate that the reasoning and linking process in one third of our students would require further improvement and refinement. This reinforces the need for careful induction for students to benefit from PBL and learning in groups as reported by Wallis and Mitchell (1985). This endeavour will be further enhanced when the Faculty receives the first cohort of students who will have been exposed to the more problem-orientated school curriculum. The concept of an introductory phase may then perhaps need to be reviewed.

References

Abrahamson, S. (1978). Diseases of the curriculum. *Journal of Medical Education, 53,* 951.

Barrows, H.S, & Tamblyn, R.M. (1980). *Problem-based learning: An approach to medical education.* New York, NY: Springer Publishing Co.

Dornhorst, A.C. (1981). Information overload: Why medical education needs a shake-up. *The Lancet, 513.*

Knowles, M. (1975). *Self-directed learning A guide for learners and teachers.* New York, NY: Association Press.

Maddison, D.C. (1978). What's wrong with medical education? *Medical Education, 12,* 97.

Mahler, H. (1977). Tomorrow's medicine and tomorrow's doctors. *WHO Chronicle, 31,* 60. Geneva, Switzerland: World Health Organization.

Neufeld, V.R., & Barrows, H.S (1974). The McMaster philosophy: An approach to medical education. *Journal of Medical Education, 49,* 1040.

Roslani, A.M.M. (1980). How can a school maintain flexibility? *Jernal Perubatan UKM., 2(2),* 122.

Roslani, A.M.M. (1981) The School of Medical Sciences at Universiti Sains Malaysia. *ACU Bulletin of Current Documentation, 50,* 17.

Roslani, A.M.M. (1987a). Evaluation: A dilemma of presumed or real value. Conference of the Network of Community-Oriented Educational Institutions for Health Sciences, Ismailia, Egypt.

Roslani, A.M.M. (1987b). Medical education In Malaysia: Professional or societal needs. Universiti Sains Malaysia.*Public Lecture Series 4.*

Universiti Sains Malaysia, School of Medical Sciences. (1980a). Curriculum Committee.*Working paper.* Proceedings from the First Workshop.

Universiti Sains Malaysia, School of Medical Sciences. (1980b). Proceedings from the Second Workshop.

Universiti Sains Malaysia, School of Medical Sciences. (1981). *Board of studies report.*

Wallis, B., & Mitchell, K. (1985). The teaching of group process skills as a basis for problem-based learning in small task-oriented groups. In: D.J. Boud (Ed.). *Problem-based learning for the professions.* Sydney, Australia: Higher Education Research and Development Society of Australia.

Annals of Community-Oriented Education
1994, Vol. 7, 293-302

Curriculum and Block Design in Problem-Based Learning: Lessons From Curriculum Reform

H.P.A. Boshuizen and H.A.M. Snellen-Balendong
University of Limburg
Maastricht, The Netherlands[1]

Abstract

The Medical School of the University of Limburg, Maastricht, the Netherlands, has a 15 year old tradition of problem-based learning. Its curriculum is based on the assumption that problem-based, self-directed learning starting from problems or cases will lead to better applicable knowledge structures. Furthermore, the different discipline are not used as an organising principle; instead pathological entities, the phases of life and classes of complaints are used as an ordering principle. This articles describes the problems experienced with this curriculum design after 10 years, the lessons learnt from these problems, and the measures taken to overcome these difficulties.

Introduction

Once upon a time, not so very long ago, there was an old miller. For the whole of his life he had worked in the mill, first as a young boy learning everything about the mill's operation and maintenance, later as a skilled craftsman. But the miller grew old and the mill grew old; the miller retired and the mill fell into decay. Many years later a group of young people decided that it was such a pity that this beautiful old mill stood motionless and broken down. They restored the mill, but they were unable to operate it. So they went to the old miller and asked him how he had done that in the past. The miller told them long stories and gave them all kinds of hints and tips, but it never really worked out. So they had to go back to the old miller. Finally, the miller decided that this was not the way to instruct these young people. He went to the mill and worked with them, and every time he did something he told them what he was doing and why. Remarkably, many details about operation and maintenance be came clear, details he had never thought of telling young millers when they had sat with him in his house. After some months a complete manual had been constructed. They realised that this had been a good procedure; the miller's knowledge was not otherwise available in a way that it could be told directly to young

---

[1] The authors wish to thank Drs B.F. Stalenhoef-Halling W.S. de Grave and P. van der Lugt, who participated in our example-block planning group. Betsy Stalenhoef-Halling passed away on November 28, 1992. Parts of this paper have been presented at the WACRA conference, Enschede, April 8-9, 1990. Preparation of this paper has been supported by a grant from the Spencer Foundation to the first author.

Requests forreprints shoud be sent to H.P.A. Boshuizen, University of Limburg, Department of Educational Development and Research, P.O.B. 616, 6200 MD Maastricht, The Netherlands.

people. Much of it could only be told and demonstrated in the environment in which he had gained and applied it.

Educational developers often feel like the old miller. Not that they are old and retired, but people come to their office asking for advice. Yet, the advice often does not work out the way it is expected to, and the advisers ask themselves why that is so. Is it because the client is slow to learn, because the adviser is not sufficicently expert, or because the advice is incomplete? This was exactly the situation for the Department of Educational Research and Development of the University of Limburg when a complete curriculum reform was started. Block planning groups had to be reinstructed, and we found that we did not have a block construction manual. This paper describes the method we applied to make our block construction knowledge explicit, and the curriculum reform that necessitated this effort.

The Curriculum and its Problems

About 20 years ago the eight Dutch medical faculties came to an agreement on the educational goals of basic medical training[2]. Required knowledge, skills and professional attitudes of future doctors were described in the General Plan '74. These graduates must have relevant knowledge of the basic sciences and the clinical sciences. Generally speaking, the basic sciences are addressed in the first two years of the medical curriculum, while the clinical sciences are addressed in the second half of the pre-clinical period. This division is not absolute, as knowledge of the basic sciences is assumed to be necessary for gaining insight into the clinical sciences, an assumption already furthered by Boerhaave in the 18th century (Lindeboom, 1971), the division can only be gradual. For example, biomedical and psychological subjects relevant for the comprehension of a specific disease are pursued in year three and four.

In traditional medical curricula, where disciplines are studied separately, organisation of knowledge is an important problem. Disciplines studied separately are separately stored in memory. This makes it difficult to acquire a knowledge structure characterised by integration of clinical and biomedical knowledge. Students of such a curriculum frequenly report the need for relearning when that knowledge had to be applied in a new setting, for instance in the clinical setting of a clerkship. These experiences and research by Boshuizen (1989) that more is needed than mere subject knowledge indicate that knowledge of different biomedical and clinical disciplines must be integrated; and that learning must be linked to knowledge about the circumstances under which that knowledge is applicable. These are important aspects of the educational goals of the University of Limburg Medical School. Problem-based learning is used in order to reach these goals.

---

[2] Basic medical training in The Netherlands takes six years: four preclinical and two clinical years. Most students enroll at the age of 18, immediately after graduation form high school.

The University of Limburg Medical School was founded in 1974 as one of the first problem-based schools in the world. When it started, there was a vague notion about the *content* of the curriculum described in the General Plan '74. The same applied to the *pedagogical structure* which would be problem-based, self-directed learning. Problems would be used in order to ensure integration, linked with application. These problems (often patient problems) would stimulate the students to study the pathology underlying diseases that may cause the presenting complaint, their diagnosis and therapy. Furthermore, the role of causal and contextual factors, such as age, sex, nutrition, environment, and psychological factors would be studied. Incidence and prevalence, and seriousness should also be considered as they affect diagnosis, treatment and prevention. It was thought that approaching the medical sciences from data related to patients would result in enhanced integration of the traditional medical disciplines and in a better appreciation of the circumstances in which that knowledge can be applied.

In order to incorporate these ideas into an actual curriculum, additioned decisions had to be made. According to Rowntree (1985) the structure of key events and critical activities (e.g., breaks, examinations, and field trips) need to be established. This event *structure* came to be two two-hour small-group sessions a week, with two hours of skills training and practicals, and two lectures. This became the general pattern of a block, each block taking six weeks, with six or seven blocks a year. Despite this clear block organisation it was not obvious what to teach in these blocks. A course or a curriculum can be seen as structured around a sequence of ideas (Rowntree, 1985). Evidently a new criterion for *idea structuring* had to be found, an organising principle that could be used instead of the separate disciplines. This organising principle should not only be logical and clear to both teachers and students, it should also guarantee that all relevant disciplines would neatly fit into the new curriculum. Rowntree describes several kinds of sequencing principles: topic-by-topic, chronological, causal, structural logic, problem-centred, spiral and backward chaining. However, the curriculum that had been developed was a mixture of these ordering principles. The first year dealt with some gross pathophysiological processes, e.g., atherosclerosis, infection and fever, tumours, and trauma. The second year was organised according to the successive stages in human life, from the pre- and perinatal period until old age and death. Special attention was given to normal structure and function during these stages. In the third and fourth year important classes of complaints were used as an organising principle. After ten years, in which this general structure remained essentially the same, the general attitude was that change was needed, that small adjustments at the block level would not be sufficient, and that major revision was required, especially in Years One and Two.

The most important problems were:

1. In the first year the students did not really concentrate on the biomedical subjects and pathophysiological principles. Instead they focused on subjects associated with patient management.
2. Year two had a built-in conflict. It had a chronological organisation, starting with

conception and ending with death. However, normal functioning of the different organ systems had to be dealt with as well. As it turned out, it was very difficult, if not impossible to combine these two principles harmoniously in the blocks. The reader might try to explain why students in a block entitled 'old age' should also study the embryology and anatomy of an organ system, e.g. the renal sytem. Our students never found our explanations very convincing.

3. Departments that had not yet been established when the curriculum was first designed (e.g., dermatology) had to fight for a place in the curriculum. There remained a relative over-representation of the earlier disciplines (e.g., gynaecology) and an underrepresentation of the more recent ones.

The first problem appeared to result from three sources: content, the sequencing principle and the problem-formats. To study pathophysiology with only minor attention to normal function does not seem rational. The content was sequenced according to a topic-by-topic principle. The different blocks could have been studied in any order, as knowledge acquired in an earlier block was not applied in another block later in that year. Finally, there were some imbalances in the format of the working problems. Most problems in these blocks had a story format (Appendix A). Such a format would be appropriate for the acquisition of clinical knowledge but it could not readily focus the students' attention on pathophysiology.

The second problem was mainly one of sequencing. A chronological ordering principle and a topic-by-topic principle simultaneously covering the whole year would seem mutually exclusive. In combination with the first year the sequencing problem is even more serious. Further analysis of these problems[3] brought the conviction that a leading thread was missing in the curriculum and that a more structurally logica sequence would be required. Therefore, three educational principles were formulated for block and curriculum design: 1) starting from the basic sciences leading to patient-based problems; 2) starting from a low level of integration leading to a high level of integration; and 3) starting from normal function leading to pathology. These three principles result in a gradual shift from basic sciences toward clinical knowledge. These principles apply to the curriculum as a whole, and should be discernible in every block (Nota de Rode Draad III, 1987), so that the structure acquires a spiralling flavour.

Compared with the first two problems, the third is almost borderline. It is only a problem of content that could be remedied by a thorough inspection of curriculum content (Snellen-Balendong, 1982). This scrutiny revealed many omissions and repetitions, leading to a new curriculum proposal which is described in 'Nota de Rode Draad III' (1987)[4].
All preliminary work was carried out by the multi-disciplinary Curriculum Review

---

[3] Many interested parties participated in this debate, among them students, staff, the dean's office, the Faculty Board.

[4] The English equivalent for 'Rode Draad' is 'Leading Thread'.

Committee, chaired by the second author. All departments and the students were given the opportunity to comment on the proposals. The final decision was taken by the Faculty Board in November 1987, and a new curriculum could be constructed.

Block-Construction

As a next step the Curriculum Review Committee designed a general outline for the curriculum, and prepared blueprints for every block describing in general terms the subjects to be addressed, relations with other blocks in the same curricular year and with earlier, basic science blocks and relevant biomedical, behavioural and clinical sciences. These blueprints represented an innovation[5]. The task of the block planning group was to translate their blueprint into a general outline of the block describing its contents and the format lectures and practicals. But in the Maastricht problem-based curriculum an important part is played by the problems on which students work in small tutorial groups twice weekly. These tutorial groups are the backbone of the system, initiating self-directed, problem-based learning. Hence, the choice and formats of the problems and other types of presentations are crucial. However, the planning groups had no guidelines, and it was difficult to write such guidelines. As time was running short, it was decided not to try to write such guidelines. Instead a group of educationalists and medical teachers simulated a block planning group and designed a model block. Both the description of the design process and the end product, a mini-block book showing the application of the most important formats, were used as training materials in a workshop for all planning groups.

The Model Block

The blueprint

The theme chosen for the model block was 'headache'. The associated blueprint indicated that two weeks were available for the study of this topic. It required that the theme was to be interpreted as any complaint that might present to a physician as 'headache' or 'pain in the head'. This suggested that the theme was to include pain in the upper and lower part of the head, not including facial pain. The educational goals of the block were also described in the blueprint, including acquiring skills in history taking and physical examination regarding headache, knowledge of the epidemiology of the complaint, knowledge of pathophysiology, and symptomatology and causes of chronic and acute headache. The blueprint described the students' relevant prior knowledge. In this case, students were expected to have acquired in earlier blocks knowledge of the anatomy of the head, neck and brain, anatomy and physiology of the otonasopharyngeal organs, anatomy and physiology of the eye, muscle physiology, neurotransmitters, stress, and relaxation therapy.However, students would have the opportunity to revise these subjects and to integrate them with new knowledge related to headache. The blueprint also described future blocks in which related subjects were to be addressed. With the exception of experiences in family medicine clerkships, the students would see relatively rare sorts of headaches in other clerkships. For this reason the block planning group focused on the more common headaches and paid less attention to other causes of headache, with the exception of acute headache requiring emergency management. Finally, the relevant disciplines were identified in the blueprint. The most important were family medicine, neurology and medical psychology. Secondary were internal medicine, paediatrics, pharmacology, anatomy, embryology, physiology and epidemiology.

---

[5] Previously the planning groups were more autonomous; adjustments were only discussed at an annual meeting by the block planning group chairmen.

From blueprint to outline of the block

The development of a block outline from the blueprint was an iterative process. A complete inventory of all subjects relevant for the theme of the block had to be compiled, a very important stage, as elements that were omitted at that stage would not be included in the block. A review of the inventory can be very useful, e.g. the planning group omitted at its first meeting to incorporate the aspect of age, a very important epidemiological factor

The second stage in the design of the block outline consisted of ordering the subjects which had been identified in the preceding stage. Eight clusters were identified, concerning history taking, physical examination, causes of headache (diagnostic classification), anatomy and function, pathophysiological mechanisms and theories, function of headache, therapy and contextual factors. This step resulted in an organised overview of all the aspects that might play a direct or indirect role in this theme, but that would not necessarily be part of the block.

The overview and the blueprint were then compared, and a pruning process was begun. No subjects were removed, but some were considered more important than others. For instance, a low priority was give to 'anatomy and function' and to a large part of the 'causes of headache' (viz., nearly all the rare causes which had been enlisted so exhaustively). Many of the causes of headache were expected to be addressed in future clerkships, and anatomy and function of structures and organs in the head and neck had been studied in previous blocks.

In the final stage, work-forms and problem formats were chosen. Whenever possible self-directed, problem-based learning was chosen. However, some goals were better addressed through practical training, while other goals called for a formal lecture. Formal lectures were chosen when the estimated time needed by students for finding specific information was high, while the yield from such effort would be low. An example might be when the educational goals included important but very recent scientific developments. In the model block scientific development in psychophysiology and the associated new insights in the treatment of headache were to be considered in a lecture at the end of the block.

As a final step the subjects and formats for the learning problems had to be chosen, in order to stimulate the students' self-directed learning. It was important to bear in mind that not all problem formats would serve every educational goal equally. The temptation to use patient cases as the format seem very strong. Some 85% of the problems designed by the block-planning groups were patient cases (Snellen-Balendong et al., 1984). Even the planning group of the model block had designed four patient cases for educational goals ranging from 'knowledge about history taking and physical examination regarding headache' to 'knowledge about causes, pathophysiology, symptomatology and therapy of chronic headache'. The patient case format was suitable for the first of these educational goals, but was notoriously inadequate for the second goal. A review session was needed to find a satisfactory solution. Table I. shows the final outline with a wide variety of educational goals, formats and types of learning problem.

Table I. Educational goals of the block Headache, chosen work forms and problem formats

Educational goal	Work-form and task format	Brief description
Acquisition of clinical knowledge and strategy: knowledge of history taking and physical examination regarding headache	real case and role playing*	Almost everybody sometimes suffers from headache, while ± 25% experience them quite frequently. List the experiences of the students in the group and identify important history questions and examinations (1 or 2 role plays).
Integration of knowledge of different disciplines: knowledge of the epidemiology of headache, especially related to diagnosis	survey* and lecture	Students do a small survey of the frequency and severity of headaches in different age groups; the outcomes are compared with other studies in a lecture
Integration of biomedical an dclinical knowledge; link with patient characteristics: knowledge of causes and symptomatology of chronic and acute headaches	two case descriptions of chronic and acute headache (story format)*	Chronic headache; discrimination between tension headache and migraine, psychosomatic aspects, physical examination. Acute headache, discrimination between a first attack of migraine and acute headache caused by subarachnoidal haemorrhage.
Integration of biomedical an dclinical knowledge; link with patient characteristics: knowledge of causes and symptomatology of chronic and acute headache	drawings of anatomic structures of the head and neck*	Identify those structures and the associated mechanisms that can give rise to chronic or acute headache; where will the pain be felt?
Acquisition of clinical knowledge: knowledge of pathophysiology and therapy of chronic headache	two lectures	New developments in the domain of the pathophysiology of migraine and tension headache and their implications for therapy
Acquisition of skills : master skills needed for the examination of head and neck as related to headaches	direct training	Specific physical examination skills needed for the examination of headaches are practised, and a complete physical examination of a patient with this complaint is performed, when new learned and old skills can be integrated
Acquisition of skills : mastery of history taking and orientate physical examination skills as related to headache	simulated patient	Practising and fine tuning skills in history taking and physical examination regarding a patient with headache

* work-forms applied in the semi-weekly small group sessions

BEST COPY AVAILABLE

Where are we Now?

All members of planning groups responsible for designing and organising the blocks of the new curriculum were trained in a two-day workshop. During this workshop they were coached in the methods described above, and start was made with the design of the new blocks. Sometimes it was difficult to persuade colleagues, who had designed block books for the old curriculum, to appreciate the advantages of the new, systematic approach, and not to start from interesting cases that might relate to a specific block theme or even from old problems. The initial planning steps and the blueprint have appeared to be successful as a starting point for block construction. All blocks of the curriculum have been renewed. Data on the quality of important aspects of the blocks, as perceived by the students and tutors, as well as the learning issues pursued by the students, have been collected as part of a thorough evaluation.

References

Boshuizen, H.P.A. (1989). De ontwikkeling van medische expertise; een cognitief-psychologische benadering. (The development of medical expertise; a cognitive psychological approach). Haarlem, The Netherlands: Thesis.

Lindeboom, G.A. (1971). *Inleiding tot de geschiedenis der geneeskunde.* Haarlem, The Netherlands: De Erven F. Bohn.

Nota de rode draad III (1987). Educational Committee Faculty of Medicine. Maastricht, The Netherlands: University of Limburg.

Rowntree, D. (1985). *Developing courses for students.* London, UK: Paul Chapman Publishing.

Snellen-Balendong, H.A.M. (1982).*Curriculumoverzicht Faculteit der Geneeskunde jaar I t/m IV 1981/1982.* (An overview of the curriculum of the Medical Faculty year I - IV, 1981/1982). Onderzoek van Onderwijs 19B. Maastricht, The Netherlands: University of Limburg.

Snellen-Balendong, H.A.M., Pollemans, M.C., & Stalenhoef-Halling, B.F. (1984). *Een analyse van het curriculum jaar I t/m IV 1981/1982 van de Faculteit der Geneeskunde.* (An analysis of the curriculum year I - IV 1981/1982 of the Medical Faculty). Onderzoek van Onderwijs 19B. Maastricht, The Netherlands: University of Limburg.

Snellen-Balendong, H.A.M. (1985). Development of formats or tasks and problems in problem-based learning. In: W.S. de Grave, J.H.S. Moust, & H.G. Schmidt (Eds.). *Tutorials in problem-based learning; A new direction in teaching the health professions, Vol. 2.* Maastricht, The Netherlands: University of Limburg.

APPENDIX

Formats and Functions of Problems

The development of problem-based learning in medicine resulted in a broad variety of formats for case presentation. Generally speaking, problems in block books can be differentiated into five main classes (Snellen-Balendong, 1985):

a. The *story* comes closest to the traditional clinical case. A story is a more or less elaborate description of a situation or an event in the widest sense. As a rule a patient figures as the central character.

b. The *S.O.A.P.* case description is also a description of a patient case in which a specific format is used. S.O.A.P. refers to Subjective (information given to the physician by the patient), Objective (information gathered by the physician by means of physical examination), Assessment (the set of working diagnoses) and Plan (treatment and/or required further investigation).

c. The *Problem Oriented Medical Record* (P.O.M.R.) is also a description of a patient case according to a specific format. The Problem Oriented Medical Record is a systematic approach to the complaint(s) presented to the physician and the associated underlying physical, mental or social problems. Each problem may require its own approach (in terms of diagnosis and treatment) and may trouble the patient for periods of different duration.

d. The *problem pack* is a format in which similar problems are grouped together. Similarity may pertain to the complaint (but different diseases) or to the diagnosis (but different complaints or different lines of treatment).

e. The *phenomenon* is a short outline of an observation made without offering a description of a real patient, related backgrounds and medical history.

The following is an example of the phenomenon format.

A piece of luck in a case of measles

Some new-borns are virtually incapable of producing antibodies because they suffer from some form of hypogammaglobulinaemia. This deficiency state is manifested clinically by recurrent infections. Yet, in these children this viral disease often shows as spontaneous and favourable a course as it does in children having a normal immune system.

Stories, S.O.A.P.

Cases, and P.O.M.R.'s are similar in that they are rather extensive patient case descriptions. This type of problems aims at the acquisition of general clinical knowledge, linked to relevant patient features, but there are differences as well. Stories primarily ask for explanation and diagnosis. The student tries to find an answer to questions like: Why does this patient have these symptoms and how can they be explained? Hence this format emphasises the elaboration of clinical knowledge and linkage to patient features. S.O.A.P. and P.O.M.R. invoke other learning activities. Students tend to work on questions such as: What to ask the patient (and why)?, What to examine (and why)?, Which diagnoses will be most probable (and why)? and How to manage (and why)? In effect, students feel invited to "play doctor" with these cases. These work-forms encourage orientation on strategy and linkage to clinical knowledge. Problem packages also draw the students' attention to the clinical aspects of disease. They are especially used for teaching students some of the pitfalls in medical practice physicians must be prepared. Students learn to identify diseases that look alike but have quite different underlying mechanisms and hence must be treated differently. This format can also make them sensitive to the different appearances of a disease and different courses they may take, depending on characteristics and circumstances of the patient. This feature of the format makes it very suitable for the acquisition of knowledge linked to patient characteristics. By contrast, only the phenomenon format leads to group discussions about a 'deep' explanation of the phenomenon in terms of basic science knowledge.

Annals of Community-Oriented Education
1994, Vol. 7, 303-308

OTHER METHODS AND MATERIALS

Patchwork in Medical Education: Rural Internship

E. Eser, A. Mandiracioglu, F. Saçaklioglu, A. Karababa, F. Dogan and M. Tokgöz
Ege University
Izmir, Turkey

Abstract

Medical education in Turkey is generally based on conventional curricula. Ege University Faculty of Medicine is one of the twenty-four medical schools in Turkey. The sixth and final year of the undergraduate curriculum is devoted to a rural internship supervised by the Department of Public Health. The interns spend two months at one of the Health Centres of the Education Research Health District.

The main aim of this programme is to familiarise the students with the dynamics of the community and to help them to adapt to the conditions. The interns are involved in every service of the health centre in a rotation programme. They are assessed by their supervisor from the Department of Public Health by means of health centre visits and the final reports which they have to prepare at the end of the period. Though "the trend of specialisation" creates an important obstacle, the evaluations have shown the programme to be acceptable and efficient.

Introduction

Although there is a growing awareness of the importance of emphasizing Primary Health Care in medical curricula, medical education in Turkey is generally based on conventional curricula, and transition from traditional curricula to innovation in medical education is very slow. The Higher Education Council (H.E.C.) has a very determining role within the educational system which makes autonomy nearly impossible. In addition, the majority of the professors are neither aware of the needs of the society nor of the necessity of work within the community. Radical changes are, therefore, very difficult and time consuming within the in the universities. Within these constraints the Department of Public Health tries to introduce innovative educational methods in its rural internship programme.

The aims of this paper are: first, to define the role of the community-oriented rural internship programme in the context of a conventional educational system; and second, to demonstrate the rural internship programme, in order to convince other faculty members of the community-oriented approach.

Requests for reprints should be sent to E. Eser, Ege University, Faculty of Medicine, Department of Public Health, 35100 Bornova, Izmir, Turkey.

Health Care in Turkey

The Health care system is very complicated. These are some underlying factors:

1. There is a well defined social health service, but, due to political reasons, the system has not been supported and cannot work properly, so that Primary Health Care is neglected.
2. Maldistribution of medical staff, hospital beds and resources are a big problem. In general, health care is urban based, although nearly half the population live in rural areas.
3. Gross National Product per capita is approximately 1300 US Dollars, and health expenditure per capita is 15.5 US Dollars. The share of health expenditure in the total budget is less than 4 %. Most of the health budget is spent on curative care.
4. 8% of the population is not covered by social insurance. Since the 1980's the trend of privatisation increases the existing problems of inequality.

Medical Education in Turkey

Medical education in the 24 university hospitals, makes students "technology addictive". Some major problems within medical education are set out in Table I.

Rural Internship

Education and Research Health District

The law of "Socialisation of the Health Services" offered the universities opportunities to establish community-oriented education programmes in the districts. The universities started their rural internship programmes in the "Education and Research Health Districts (ERHD)" with protocols between the Ministry of Health and the universities. For approximately 25 years the Education & Research Health Districts served community-oriented education and research, which proved the new system to be very effective. ERHD is a defined population area in which health care is given by the health centres. The district is administered by a director who is usually a lecturer in the Department of Public Health of the medical school. He or she is responsible for everything dealing with the health services including in-service education and administration. The facilities and the staff come under the Ministry. No additional money is paid either to the health centre staff or lecturers apart from their salaries. At the end of every year a report must be prepared which includes data on health care and health education, such as demographic data, health indicators, preventive and curative services.

Education Programme of Rural Internship

Ege University Faculty of Medicine has a conventional medical education system. The sixth and final year of the undergraduate curriculum is devoted to an internship programme which includes the rural internship supervised by the Department of Public Health. Bornova Education and Research Health District has been designated as the field laboratory of rural medical practice. By mid-1992, the population of the district was 134,535 in urban, semi-urban and rural settlements. The interns spend two months of their

Table I. Problems facing medical education

Situation	Outcome
Education System	
- Overcrowded students (5000 graduates a year)	- Decreasing the quality of education
	- No real relationship between students and lecturers
	- Unemployment of physicians
- Conventional education system	- Lack of comprehensive (holistic) approach to medicine
	- Lack of interdisciplinary integration
	- No active participation of lecturers and students in decision making
- Higher Education Council	- Academic boards of medical faculties have very little chance to modify their curriculum
	- Inadequate democratic elections of administrators
	- Decision making process bypasses the lecturers
Health System	
- integration of medical education and health service	- Especially Primary Health Care is neglected during medical education
	- The preventive and curative care concepts are separated conceptually
- The status of general practitioners is decreasing progressively	- There is no moral and financial support for graduates to become general practitioners
	- High tendency to specialise
- Privatisation	- Community-oriented curricula and preventive aspects are neglected
	- High tendency to specialise
Facilities	
Infrastructure	
- High technology	- Technology addictive graduates
- Maldistribution of facilities among departments and establishment of new departments without any infrastructure	- Lack of standardisation of the graduates
	- Inadequate education material
	- Inadequate number of lecturers
- Hospital-based education	- Medical education strictly tied to high technology
	- Students not aware of the basic health problems of the community
Lecturers	
- Maldistribution among the departments	- Lack of qualified lecturers in newly established departments
	- Inverted pyramid of academic staff in established departments (more senior, fewer junior lecturers)
- Part-time teaching	- With too many students, the lecturer-student relationship decreases further
	- Lecturers give priority to their private income rather than to medical education

final year at one of the nine Health Centres of the district. This is the only community-oriented approach within the conventional system of the Faculty.

An intensive refresher course in theory is offered in the first month for approximately six hours per week. At the same time the students participate in the services at their health centre. The interns are expected to analyse population dynamics, demographic data, and health and ill health patterns of the local community. In order to standardise the analyses and compare the findings; a guided evaluation is performed with an evaluation form. Each intern is given a defined population. The intern is matched with a midwife and works with her during home visits. During the second month, the interns are expected to undertake an epidemiological survey for a period of not less than four weeks.

Active Participation in Health Care

In first month the interns have the opportunity to observe and work in primary health care. They observe the duties, functions and problems of the health centre staff. They gain valuable experience through active participation. They rotate through each unit: outpatient clinics, laboratory, immunisation unit, family planning clinic, medical secretariat. In addition they work with midwives, sanitary technicians, nurses during school health activities and their investigation of communicable diseases. Two main aspects are emphasised during the period. A holistic approach is crucial in preventive and curative health care. Health care is a team effort, and each member has equal importance and function.

Supervision of the interns is undertaken by academics of the Department of Public Health who visit the health centres regularly. On a daily basis the students work with the physicians of their health centre.

Epidemiological Research

During the second month a team of 5-6 interns chooses a topic, undertakes a literature review, prepares a questionnaire, and collects the data. Analysis of the data leads to the presentation of written and oral reports. They work with their supervisor, who is a lecturer of Public Health. The main perspective of this supervision is to guide the interns to gain self-confidence in doing researche.

Limitations of the Internship Programme

Lack of autonomy. The general principles of the curriculum, the length of the rural internship, and the number and type of the staff involved in the programme are determined by the Higher Education Council. Only the selection of educational methods is open to the medical school. Thus the flexibility of the programme is limited in its ability to respond to local needs and conditions.

Lack of a holistic community-oriented approach to education within the faculty. Although it is called "integrated", the curriculum is far from holistic, nor is it community-oriented. The conventional approach is far from meeting the needs of the community. The only intervention has been made by the Department of Public Health, in order to provide interns with an opportunity to consider the needs of the community. That is the reason why the authors call this intervention a patchwork in medical **education**.

The trend of specialisation. The education which aims to produce specialists makes students strive to become specialists rather than skilled general practitioners. Twice a year, most of the graduates sit for the national board examination that admits no more than 5 - 10% to postgraduate resident positions in university clinics and teaching hospitals. Because of these limitations, graduates are forced to work in Primary Level Health Care despite their wish to specialise. This fact poses a big dilemma for the interns and affects the rural internship. The General Practitioners in the health centres have the same preference for specialisation and they are not enthusiastic in working in Primary Health Care.

Evaluation of the Internship Programme

Resources available for the programme are restricted to the basic requirements of the health centres paid for by Ministry of Health. No other foundation, institution, or the university have any role in financing. This creates some important problems in the programme, especially for laboratory equipment. Some of the health centres have very poor laboratory facilities, so that the interns working in some health centres have less laboratory experience than in others.

While the Health Centre staff "share their experience" during the day by day activities rather than formal education, this activity does not require any additional effort or extra time.

According to the results of the twice yearly interviews by the Department of the Public Health, the presence of the interns motivates the staff in their works. On rare occasions some women refuse male interns during home visits with the midwives. It is said that the interns help the staff especially in immunisation and laboratory services. The seminars given by the interns as in-service education for the staff are said to be very useful, especially for the midwives and nurses. While the programme seems to be acceptable to the staff, they would like to be rewarded by an additional fee for the intern education programme.

At the beginning of the internship, the interns appear not to be ready to accept the programme, mainly because of the education system itself. They do not appreciate the team concept belonging to primary health care. The aim for specialisation forces them to pay very special attention to the National Board Examinations that will take place shortly after their graduation. The evaluation of the supervisors' intern visits and the final reports of the evaluation forms prepared by the interns point out that the acceptability of the programme increases as the education programme progresses. Interns explain their enthusiasm in carrying out an epidemiological research, possibly due to a feeling of "creating something which belongs to them".

Conclusion

The basic philosophy of the rural internship is to provide students with an opportunity to observe the local community, to identify problems faced by deprived population groups, to understand team work in health care and to develop a humanistic approach in the implementation of their profession.

Because of the trends towards privatisation, the State does not accord any importance to primary health care. Social spending, such as education and health, are not the priorities of the State. This affects every aspect of life, including medical education.

Interns are not enthusiastic in working at the health centre but they obtain valuable experience in Primary Health Care. Interns expect to specialise in accordance with the changing value system all over the world. This is an important dilemma for educators. Yet the conventional approach does not meet the needs of the community. The only intervention has been made by the Department of Public Health. That is the reason why the authors call this intervention a Patchwork in Medical Education.

Bibliography

Eren, N., & Oztek, Z. (1982). *Health centre management.* Ankara, Turkey: Hacettepe University of Community Medicine. Publication No. 22.

Pratinidhi, A.K. et al. (1982). Community-based projects in rural internship: An alternative approach. M*edical Education, 26,* 368-371.

Sacaklioglu, F., & Aksakoglu, G. (1991). Rural internship. *Annals of Community-Oriented Education, 4,* 77-80. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Shapiro, M.C., Shapiro, R.A., & Ubolcholket, S. (1992). Medical education in Thailand. *Medical Education, 26,* 251-258.

Report on medical education in Turkey (1991). Ankara, Turkey: Turkish National Assembly Research Commission.

Annals of Community-Oriented Education
1994, Vol. 7, 309-315

The Skills Laboratory as Viewed by Medical Students

I. M. Hamo, M. Das and J. Lanphear
United Arab Emirates University
Al-Ain, United Arab Emirates

Abstract

The new medical school of the United Arab Emirates University places particular emphasis on early training in clinical skills with simulators, fellow students and simulated patients, before the students meet actual patients. This training takes place in a culture, where male and female students practise these skills in segregated sessions. The paper reports on the students' perceptions and reactions in relation to their experiences.

Introduction

The Faculty of Medicine and Health Sciences (FMHS), United Arab Emirates University (UAEU) was founded in 1986. It implements an integrated curriculum designed to prepare its graduates to either become general physicians or pursue specialty training after a one year internship. From the beginning the curriculum has emphasized the acquisition of clinical skills. Simulations have become increasingly popular during the past several years as a teaching device in medical studies (Hoban, 1978). They can provide valuable learning without harm, inconvenience or actual cost to the patient or learner (Schneiderman and Muller, 1972). Simulations are believed to have numerous advantages for effective learning of both psychomotor and cognitive skills and are particularly useful in achieving educational goals related to teaching manipulative skills and attitudes (Miller, 1987). They also provide a standard against which performance can be judged (Spannaus, 1978) and are believed to enhance students' self-confidence. A skills laboratory (SKL), where simulations (including models, video tapes and simulated patients) are used to teach clinical skills in communication and interviewing, and physical examination, as well as laboratory, diagnostic and therapeutic techniques, was thus established to facilitate the training of these skills prior to the students' first encounters with hospital patients.
The clinical skills curriculum, an innovative feature of the first three years of the medical curriculum, is designed to integrate skills teaching in the various modules, primarily to prepare the students for their clinical years.

On average 25-35 students are admitted to FMHS each year. The majority are female because most parents prefer, for cultural reasons, to have their daughters study inside the country. Male and female students are segregated throughout the entire medical curriculum, with class-rooms in two separate locations. The SKL, dissecting rooms and teaching

---

Requests for reprints should be sent to I. Hamo, United Arab Emirates University, Faculty of Medicine and Health Sciences, P.O.B. 17666, Al-Ain, United Arab Emirates.

laboratories are central facilities used by all students but at different times to maintain sex segregation. During clerkships students are assigned to either the same or different hospitals but most certainly attached to different clinical disciplines where each sex learns separately. The faculty members therefore teach the same topic/skill twice. Both male and female faculty staff teach all students in most instances. However, clinical skills that involve physical examination and supervision of female students' peer examination are taught by female academics. Male students are taught clinical skills by both male and female faculty staff. Therapeutic and diagnostic skills with simulators, and physical examination skills with simulated patients are taught to all students by male and female faculty staff. All students examine patients of both sexes in hospitals and other health care facilities with nothing more than an initial slight hesitation.

In spite of sex segregation in the education system right from primary school, our first graduates, males and females, who are currently engaged in their internships, work together in the same patient care facilities. They practice medicine with patients of both sexes and are free to choose their future specialties.
Female students' future practice choices seem not to be influenced by patients' sex. Many are already showing interest in disciplines like surgery, internal medicine, and family practice medicine which involve providing medical care for both sexes.

The first intake of students, admitted in 1986, experienced a skills training curriculum in parallel with the first three year Organ-System Modules. They spent an average of two scheduled hours each week in the SKL and were free to use the facility for independent practice. This was followed by practice with real patients in clinical settings.
By August 1992 these students completed a one year junior clerkship with rotations in surgery, internal medicine, family practice, paediatrics, psychiatry, and obstetrics and gynaecology (Lanphear, 1991).

Near the end of their first clinical year, the students were invited to provide feedback on the strengths and weaknesses of skills teaching in a laboratory situation. This paper reports on a study to evaluate the experience of early skills teaching in communication and interviewing, history taking and physical examination in the SKL.

Subjects and Methods

A questionnaire was designed by the investigators to obtain student opinions about the extent to which prior learning of communication and interviewing (history taking) and physical examination skills using simulations in the skills laboratory was useful when the same skills had to be applied with actual patients during clinical rotations. The students were encouraged to provide reasons for their answers and to offer suggestions for future planning of the SKL programme. At the time of the study there were 28 students (18 females and 10 males) in the junior clinical rotations near the end of the second semester of their sixth, penultimate year: medicine, surgery, obstetrics and gynaecology, and psychiatry.

The students were briefed in small groups about the purpose of the study and the details of the questionnaire. They were told that their responses would be confidential and used in planning future SKL programmes. The students were requested to volunteer and thanked for their cooperation. They were encouraged to answer honestly and openly with no hesitation. Statistical analysis of the responses used Statistic Packages for Social Sciences (SPSS).

Results

All 28 students volunteered for the study. All indicated that their prior training in communication and interviewing skills had helped them to take medical histories from patients. 80 percent agreed that physical examination skills training in the SKL was helpful during their junior rotations. The 20 percent who disagreed were female students.

The four main reasons given for efficiency of SKL training prior to the clerkships were: motivation for learning (89%), consolidation of theoretical knowledge (86%), integration of different aspects of knowledge and various skills (86%), and development of confidence with patients (81%).

Details of the students' views on SKL communication/interviewing and physical examination skills training is shown in Figures 1 and 2 respectively.

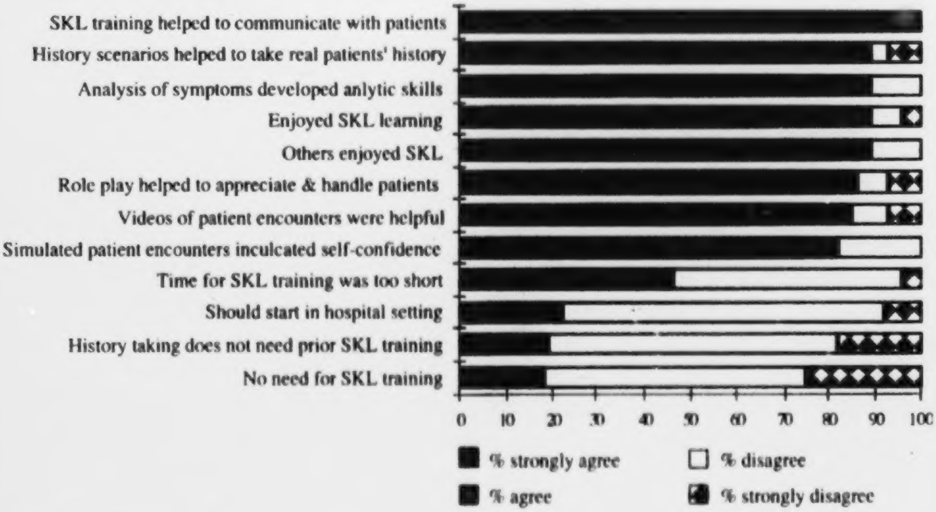


Figure 1. Students' perceptions of the value of training in communication and interviewing skills

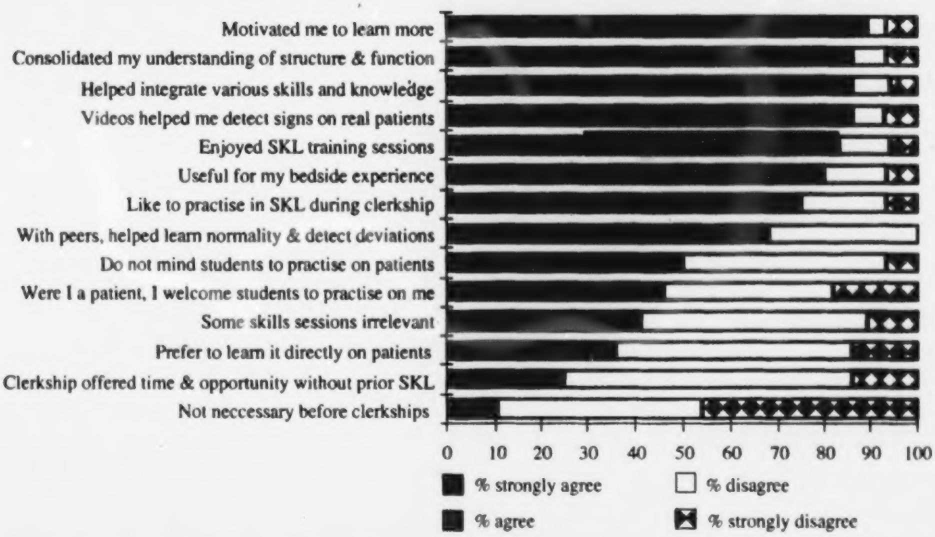


Figure 2. Students' perceptions of the value of training in physical examination skills

Discussion

This pilot study identified SKL contributions to training in communication, interviewing, history taking and physical examination skills and its impact on further training with actual patients during clinical rotations. Clinical competence encompasses skillful history taking and performing a proper physical examination among many other skills. Communication and interviewing skills are first taught in the SKL to help students learn and appreciate the importance of building a solid patient-doctor relationship to enhance confidence and trust. This is vital for complete data collection, and both for patient satisfaction and compliance to management (Inuh et al.,1976; Ware et al.,1984). Learning different phases of the interview process and analysis of symptoms is an integral part of these sessions. Following demonstration by an instructor, physical examination skills are practised initially by students examining each other and later with simulated patients. Only when skills are reasonably mastered do students apply them to hospital patients.
This training in the SKL during the early years of medical education in a non-threatening atmosphere allows for mistakes and repetition without student embarrassment or patient inconvenience. During the clinical clerkship two-thirds of the scheduled time is allocated to clinical teaching including the practice of clinical skills with patients.

All students agreed that prior training of communication and interviewing (history taking) skills was helpful for a variety of reasons. This is similar to the findings of van Dalen (1989), especially so for its role in the integration of various skills noted by 86 percent of our students. More students (89%) confirmed that analysing symptoms during SKL interviewing sessions helped them later at the bedside. Students of the University of

Queensland, Australia, also found that their ability to analyse interviews and to communicate with patients was significantly improved following a consultation skills course which used feedback on videotape recording of their consultations with real patients (del Mars and Isaacs, 1992).

Physical examination skills training on each other is considered significant in the development of future physicians' attitudes toward their patients. Their experience as simulated patients should help students to appreciate better their patients' situations and enable students to guide, help and advise their patients about the nature of a particular examination. 80 percent of all students agreed that practising physical examination skills helped them to learn about normal findings and to detect deviations in patients more readily. 86 percent agreed that it consolidate their understanding of normal structure and function. Earlier, at Leicester Medical School, UK, 87 percent of students showed satisfaction with the use of simulated patients in a general practice course teaching them interviewing and physical examination skills (McAvoy, 1988).

In the present study 20 percent and 18 percent of students respectively (all female) found physical examination skills training in the SKL neither helpful nor enjoyable. However, only 11 percent of all students indicated that physical examination training in the SKL was not necessary before clerkship.

Interestingly the agreement by 86 percent of students that physical examination consolidated their understanding of normal structure and function fell to 68% when the same question was formulated slightly different replacing "physical examination" with "peer examination". Female students were solely responsible for this fall. Although peer examinations are performed in privacy, similar to clinical settings, and essentially do not include culturally sensitive parts of the body, the slightly negative attitude of female students towards this training in the SKL may be because they were not comfortable in exposing themselves to female peers. These attitudes were detected from the beginning during the SKL training sessions, but, with persuasion and emphasis on the importance and benefits of this approach, most students eventually participated.

The unwillingness of 56 percent of female students to participate, as patients, in student physical examination skills training again confirmed their hesitation to volunteer for physical examination in conformity with cultural norms. Although all male students enjoyed and participated, with no reservation in peer physical examinations, yet 50 percent would not want to be used for students' physical examination training, if they were patients. This opinion, expressed by medical students who should be most appreciative of the significance of this training, further supports the need for SKL teaching facilities using simulations in this and other institutions. Figure 3 shows the difference between male and female students' views.

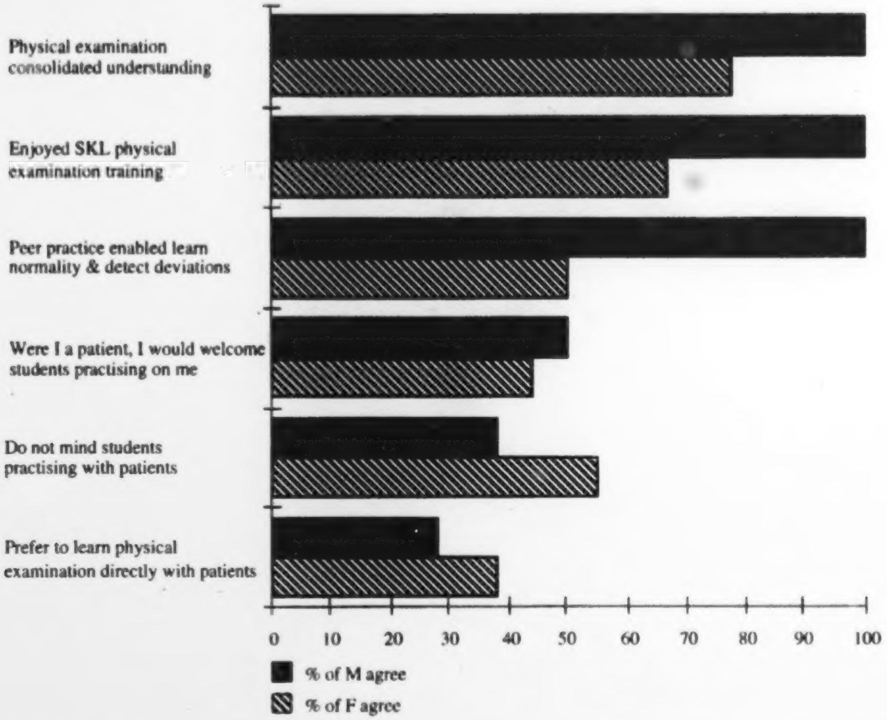


Figure 3. Gender variation in student's perceptions

In answers to open-ended questions students clearly indicated that they could not have learned so manyskills during the short time in clinical clerkships without their prior exposure in the SKL.

Besides their general satisfaction with the SKL programme, students also identified areas that needed reinforcement. They commented on the long period between learning particular skills and practising them in the hospital setting and suggested revision classes prior to relevant clinical sessions. 75 percent expressed the desire to continue SKL training during clinical rotations and repeated the need for more integration between SKL and clinical rotation training for bridging gaps. One formal link could possibly be a pre-clerkship intensive clinical skills course.

Conclusion

The authors are aware of the limitations of this study which relies on self-reporting by students. However the reflected students' satisfaction emphasizes the usefulness of simulations for clinical skills learning, especially when clinical teaching is introduced early in the medical course.

Despite the small percentage of negative responses, they are nevertheless important. The integration of SKL teaching with theoretical teaching cannot be over emphasized. Skills training in the SKL must be relevant to clinical needs, particularly to the on-going theoretical teaching. More realistic simulators should be provided, as students' dissatisfaction seems to be related to their belief that simulations are inferior to real life practice. Clearly, there are sensitive cultural issues to be addressed in the implementation of SKL training. Whether or not students should examine each other has been debated in medical faculties for a number of years. Some female students do object to exposing parts of their bodies even to each other. Many schools have developed simulated patients who are both extremely skilled and able to provide feedback to students. The development and implementation of a simulated patient programme is in its infancy in the Faculty of Medicine and Health Sciences at UAE but holds great promise for improving the effectiveness of the SKL programme in this cultural milieu.

Student feedback and their skills at this stage are sufficiently positive to support the further development of the SKL programme.

References

Dalen van, J.V. (1989). The curriculum of communication skills teaching at Maastricht Medical School. *Medical Education, 23,* 55-61.

Hoban, J. D. (1978). Successful simulations for health education. *Audiovisual Instruction, 23,* 20-22.

Inuh, T., Yourtee, E. L., & William-Son, J. W. (1976). Improved outcomes in hypertension after physician tutorials. *Annals of Internal Medicine, 84,* 646-651.

Lanphear, J. H. (1991). The evolution of medical education in the UAE University: A new curriculum for a new era. *Emirates Medical Journal, 9(3),* 214-224

Mars del, C.D., & Isaacs, G. (1992). Teaching consultation skills by videotaping interviews: A study of students opinion. *Medical Teacher, 14(1),* 53-58

McAvoy, B. R. (1988). Teaching clinical skills to medical students: The use of simulated patients and videotaping in general practice. *Medical Education, 22,* 193-199.

Miller, M. D. (1987). Simulations in medical education: A review. *Medical Teacher, 9(1),* 35-41.

Schneiderman, H., & Muller, R. L. (1972). The diagnosis game, a computer-based exercise in clinical problem solving. *Journal of American Medical Association, 219,* 333-335.

Spannaus, T. W. (1978). What is a simulation? *Audiovisual Instruction, 23,* 16-17.

Ware, J., Davies-Avery, A., & Stew-Art, A. L. (1984). The measurement and meaning of patient satisfaction. *Health and Medical Care Services Review, 1,* 1-15.

Annals of Community-Oriented Education
1994, Vol. 7, 317-327

Improving English Communication Skills of Preclinical Medical Students

S.C. Hayes, D. Farnill and A.J. Sefton
University of Sydney
New South Wales, Australia

Abstract

Australia is a multicultural society, and the Faculty of Medicine at the University of Sydney enrols many students from non-English speaking backgrounds who are fairly recent immigrants. Many of these students have difficulties in developing effective communication with patients and academic staff. Medicine at the University of Sydney is a six-year course, and the majority of students enter directly from high school. It is important to identify students who have communication difficulties early in the course, so that special support can be provided. The methods used to assess English language proficiency, the support measures, and the new curricula introduced by the Faculty are described.

Introduction

In 1990 the Faculty of Medicine at the University of Sydney was sufficiently concerned about the communication skills of its students to appoint a working party on communication skills, representing most of the Departments in the Faculty. Academic staff expressed concern about the inability of some students to communicate with patients and, indeed, with staff. The Working Party was asked to identify students with defective language skills in First Year, with a view to advising them to undertake remedial courses. Since that time, the Faculty has assessed students every year upon entry to the course and has undertaken follow-up studies. One study is a longitudinal follow-up of students tested in the early years of the project, and the other involved screening of students in the later years of the course.

English is the principal language of communication in Australia and Australian universities. Lack of a minimum level of competence in English seriously jeopardises the ability of students to listen to, participate in and understand classes, to read textbooks, to sit for written, oral or practical examinations and prepare assignments, and to communicate with teachers at all levels, as well as with other students. In addition, the students' ability to communicate with patients and with other medical practitioners and health professionals will depend to a great degree upon English Language Proficiency (ELP).

Characteristics of Students

Medicine at the University of Sydney is currently a six year course, and most students enter

Request for reprints should be sent to S.C. Hayes, University of Sydney, Department of Beharioural Siences in Medicine, Blackburn Building CD06, New South Wales 2006, Austrialia.

the medical course directly from high school. Competition for places is strong, and students are selected on the basis of their Higher School Certificate (HSC) results. Although all students are required to take English as part of their HSC, their aggregate score for selection purposes does not necessarily include their score in English. In fact, most students achieve high selection aggregates of their 10 best units through combinations of mathematics and science units such as physics and chemistry (Sefton, 1990).

Australia is increasingly becoming a multi-cultural society. Immigration from Europe, the Middle East, Indo-China and many other parts of the world has contributed approximately 60% of the population growth since World War II, and the enrolment in Medicine reflects this diversity. In 1992, of the total of 229 students enrolling in first year, 204 were Australian citizens or permanent residents of Australia and 25 were international students, that is, they came from other countries, and paid fees to attend university in Australia (Farnill et al., 1992). It is a visa condition that international students return to their country of origin after completion of their medical studies. Figure 1 shows the countries of origin of the total 1992 cohort. It may be seen that only 39% indicated that they were born in Australia and that many students originated in regions where English is not the first language.

Figure 2 shows students' years of residence in Australia at the time of their enrolment. It may be seen that, while 64 percent had been resident for over ten years, 22% had been resident in Australia for only three years or less. Eleven percent, mostly international students, had arrived in Australia only a few months previously.

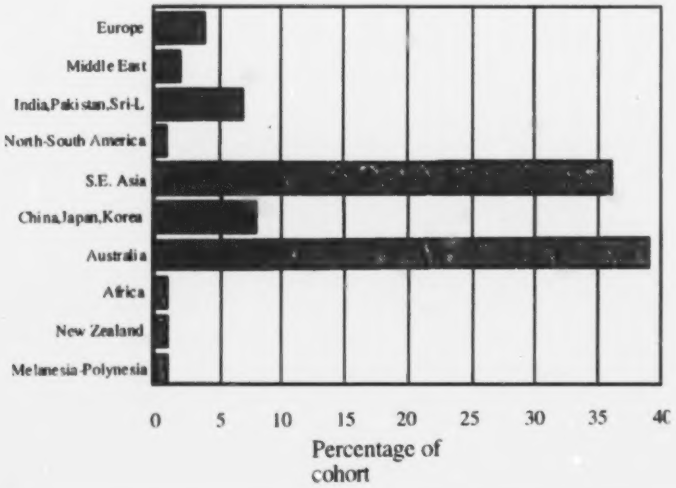


Figure 1. Country of origin of the 1992 Medicine I entry cohort

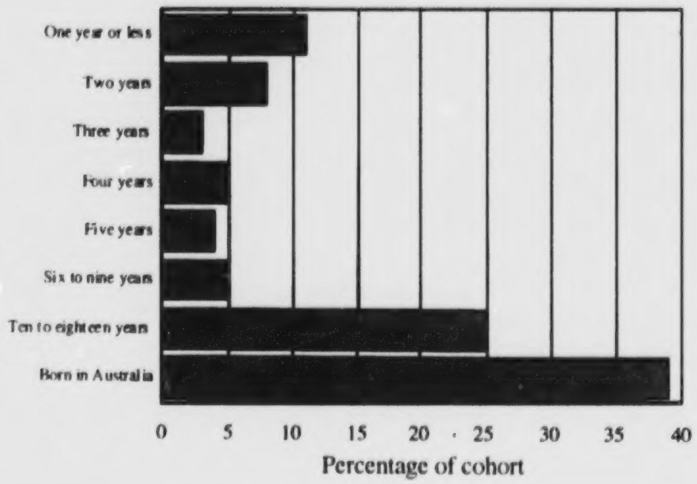


Figure 2. Years of residence in Australia of the 1992 Medicine I entry cohort

Seventy-one percent of the cohort were aged 17, 18, or 19 years. Twenty-four percent were aged between 20 and 30, and 5 percent were over 30 years. The oldest student was aged 43 years.

Assessment of English Language Proficiency

The assessment instruments which have been used are the Screening Test of Adolescent Language (STAL) (Prather et al., 1980) and the Woodcock Language Proficiency Battery (WLPB) (Woodcock, 1984).

The STAL includes 23 items, subsumed under the four subtests of vocabulary (12 items), auditory memory span (3 items), language processing (5 items) and proverb explanation (3 items). The test has been adapted so that it can be administered to groups of students. Some minor changes in terminology were made to make the test appropriate to an Australian context.

A sample of students in each cohort undertake the WLPB (English Form). This test consists of eight sub-tests measuring oral language, reading, and written language. The sub-tests are picture vocabulary; antonyms-synonyms; analogies; letter-word identification; word attack skills; passage comprehension; dictation and proofing. The test gives results in the three major areas mentioned above, as well as a broad language cluster score. While the results are presented in a number of ways, for the purposes of the research, percentile ranks and age equivalent scores are used. The sample who participate in this in-depth testing include all those who fall below a cut- off point on the STAL which indicates that they are at risk of having deficits in English, as well as a sample of those who do not have difficultiesin English as revealed by the STAL. The latter group provides an opportunity to validate the results on a "normal" group.

A study of the concurrent validity of the STAL, correlating it with the WLPB, yielded a Pearson correlation of .78 ($p<0.001$) with a sample of 152 students. (Hayes and Farnill, 1992). This result indicates that the STAL can be regarded as a useful screening test, and valuable to colleges where early identification of students in need of remedial English programmes is sought. Through comparisons with WLPB scores, a STAL cut-off score of 19 or lower was found to be optimal for the purposes of this medical school. This cut-off score correctly identified 63 (93%) of the 68 students in the sample who were below average on the WLPB although it misclassified 35 false positives who were above average but who for some reason did not perform optimally on the day of the STAL test. Figure 3 shows the distribution of STAL scores for the 1990, 1991 and 1992 cohorts.

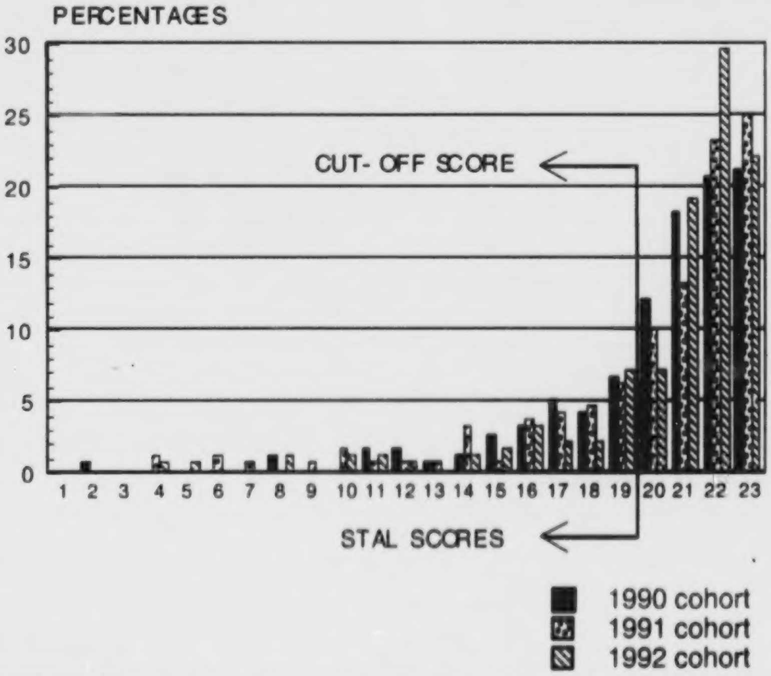


Figure 3. Screening test (STAL) scores for the 1990, 1991, and 1992 cohorts

In the first year of the study, in 1990, tutors were asked to rate students' ELP. Tutors' ratings correlated .67 ($p<.001$) with the WLPB age equivalent score, and .66 ($p<.001$) with the WLPB percentile rank. In addition there were significant correlations between the ratings and all the WLPB sub-tests. These results indicate that tutors can assess, with a high degree of accuracy, their students' ELP. The practice of seeking tutors' ratings was not continued, for a number of important reasons. First, it was felt that tutors' ratings could be perceived as being influenced by other personal characteristics of the students. Secondly, tutors could only make accurate judgements after they had taught students for a period of time, and it was considered important to assess students' language skills as early as possible in the course, so that remedial courses could be recommended to students with ELP deficiencies. Thirdly, tutors felt more confident in making ratings of students who participate well in classes, yet those who are silent in class are likely to be those with ELP difficulties.

Results of ELP Testing

ELP and results in the medical course

The results for the 1990 and 1991 cohorts (Hayes and Farnill, 1993) indicated that WLPB Percentile Ranks and STAL scores correlated significantly with results in all subjects in the first year of the medical course except Biomathematics (median r 's = .43 and .29 respectively).

The correlation between ELP and achievement in the medical course continued into second year. Results in five of the six second year subjects correlated significantly with WLPB and with STAL scores (median r 's = .39 and .20 respectively). The exception was Pharmacology which is examined solely in a multiple-choice format. It seems that whatever the causes of the association between ELP and course results, they continue to have effect beyond the first year of study. The correlations were generally higher for the sample of students who were tested on the WLPB, than for the entire cohort undertaking the STAL, indicating that ELP plays a stronger role in examination results for those students who are poor in English. Other unmeasured variables account for more of the variance as ELP improves; that is, ELP becomes a less significant predictor of success in the course for students who are proficient in English. It could be hypothesised that the unmeasured variables include motivation, minor psychiatric problems, personal difficulties, study skills and lifestyle factors.

Students' final high school English results were the best predictor of success in first year medicine subjects, with high school English results being significantly correlated with all nine subjects. Biomathematics had the lowest correlation with English, at .15 ($p<.05$); all the other eight subjects correlated at the $p<.001$ level of significance with English. Other high school results had a far lower rate of correlation with first year medicine results. For example, high school Physics had the next highest rate, correlating with only four first-year medicine subjects, all with a strong numerical base.

Prevalence of ELP deficit in student cohorts

In the three years since the commencement of this research, the prevalence of first year students identified as having serious ELP deficits is as follows:

1990	12.7%	N=235
1991	15.2%	N=243
1992	12.0%	N=229
1993	13.0%	N=251

It is important to note that the "international" students have to satisfy language tests prior to admission and that, with only one or two exceptions each year, all of those with ELP deficits are Australian citizens or permanent residents.

Two year follow up with WLPB

A panel of 68 students was tested using the WLPB in 1990, and 66 were re- tested in 1992. The panel consisted of all students whose WLPB scores identified them as having serious ELP deficits, that is, "cases" (N=30), plus some "normal" controls (N=38). The two students who were not available for re-testing in 1992 were from the "case" group, leaving a cohort of 28 cases in 1992.

The results indicate that the controls, operating near the ceiling of the test initially (equivalent to the language development of a 33 year old) nevertheless managed to improve their performance slightly over the two years.

The group mean ELP for the cases improved from that of an average 14.7 year-old to that of an average 16.5 year-old over the two years. The group result masks the differences between cases who made little measured progress over the two years and those who achieved a substantial improvement. Thirteen cases were assessed as not keeping up with the normal rate of language development over this time span, whereas 15 made above average improvement. A structured interview which canvassed the patterns of usage, language experience and exposure failed to detect any differences between those who improved and those who did not.

These results indicate that participation in two years of the course (including the supplementary remedial courses undertaken by some cases) does not necessarily reduce the gap between low initial levels of ELP and the levels deemed appropriate for effective study and professional clinical work. It cannot be assumed that students will catch up during the medical course. The other important finding is that medical students without ELP deficits are characteristically functioning at a very high level of ELP, far higher than their age peers, and yet exposure to learning experiences during the first two years of the medical course still enables them to improve their language sophistication.

Implementation of Remedial Programmes and Assessment Procedures

On the basis of the strong relationship between the STAL and the more reliable and valid WLPB, a STAL score of 19 or lower was adopted as the cut off for alerting students that a serious language difficulty might be present. In selecting this score it was decided to risk falsely alerting competent students, rather than to accept the risk of failing to alert true cases.

Following presentation of the results of the first year of the study to the Faculty of Medicine, the Faculty decided to implement a two-pronged programme to reduce the problem of ELP deficits among students before they entered the clinical years of the medical course (from Fourth Year onwards). First, procedures were introduced which aimed at increasing students' competence in English and in medical communication skills generally. These included redesigning some of the components in pre-clinical courses such as Human Behaviour (in First Year), and Medicine and Society (in Second Year). These changes involved increased practice in interviewing using video and audio tape feedback, role plays, and pseudo - patients. In addition, other resources within the University assisted with programmes for students having great difficulty with ELP - cooperation was forthcoming from the Learning Assistance Centre (LAC) and the Counselling Service; both instituted special courses for medical students, some during vacations.

The second prong to the approach was the introduction of two assessments of communication skills, so that all students have to satisfy the requirements of Medical Communication I and II. Medical Communication I is assessed towards the end of Second Year, while Medical Communication II is assessed in Third Year. Students who do not satisfy the requirements of Medical Communication I are not permitted to enrol in Third Year until they do so. Students who do not satisfy Medical Communication II are permitted to carry this subject into Fourth Year, and are given the opportunity for further assessment. If they still fail to satisfy the requirements by the end of Fourth Year, they are not permitted to enrol in Fifth Year until they do so.

A serendipitous finding has been the enormous teaching value of each of these assessment procedures in assisting students to improve their communication skills. Because of their value, the procedures are here described in some detail.

Medical communication I

Every student in the second year of the course is required to participate in a ten minute interview with a senior staff member who has experience in teaching and assessing communication skills. The interview is about some aspect of the staff member's (role-played) life history. Students present themselves ten minutes before the interview appointment, and select a topic randomly from a list of ten topics for each interviewee-staff member. Students then have ten minutes to prepare their interview outline. The purpose of this is to prevent students from having the opportunity to rehearse a standard interview format. Following the interview, students are given 20 minutes in which to make a written summary of the interview. This includes demographic and life history data about the interviewee. Because the role-playing varies from interview to interview, students are unable to compare notes.

Students are graded as satisfactory or unsatisfactory on the basis of the interview and the written report. Students receive a written feedback sheet, summarising the strengths and weaknesses of their interviewing skills and report writing, as well as informal verbal feedback immediately following the interview.

The Australian academic year runs from February to November. Interview appointments are offered from May until October, so that students who are confident about their interviewing skills can attempt the task early on and not have to concern themselves further, while those who have poor interviewing skills can attempt to satisfy the requirements early in the year and have an opportunity for remedial work before they make a further attempt later. Students with poor communication skills can make two attempts before being graded as unsatisfactory. They then have a further opportunity to pass when they are offered a supplementary examination in January of the following year, prior to enrolling in Third Year. The supplementary examination consists of an interview with a pseudo-patient on a topic related to life history. It is observed through a one way screen by three senior clinicians on the Faculty, and rated by them as satisfactory or not. Those students who have not been able to pass any of these attempts are excluded from the medical course until they are successful.

In 1992, 253 second-year students were enrolled in Medical Communication I, and 217 (86%) passed at their first attempt. Twenty four students (9%) passed at their second attempt. Three students did not take the supplementary examination because poor results in other subjects required them to repeat second year. Nine students took the supplementary and seven were successful. The two students who failed the supplementary were not allowed to enrol in Medicine III, and were encouraged to transfer to another university course for a year, and concurrently to undertake intensive English language and communication skills courses. One year later, these two students were successful and will be allowed to resume their medical studies.

Medical communication II

Medical Communication II has two main components; taped interviews and an observed clinical interview.

Taped Interviews. During the third year of the medical course, all students have to undertake six interviews with a variety of subjects. Subjects must include a person with an intellectual disability; a person in a nursing home or geriatric ward; someone who speaks a different language from the student's own first language (although the interview must be conducted in English); an adult who is not engaged in paid employment outside the home; an adult who is engaged in paid employment outside the home; and a young adult between 18 and 22 years. Students may not interview members of their own family, or other medical students, or multiple members of the same family. Informed consent to the interview must be obtained, orally and in writing. All six interviews are tape-recorded, and cannot exceed

60 minutes. The topic of the interview is a life history of the interviewee, including date and place of birth, family and social history, education, work experience, health history, and present life situation. At the end of the interview, the interviewee is asked whether they have enjoyed the interview, whether there were any topics they would have liked to have talked about more, and if they have any suggestions for the student to assist in improvement of interview skills. These verbal evaluations are tape recorded also. In addition, interviewees are required to complete an evaluation form.

Students then complete self-evaluation comments for each interview, commenting upon their approach to the interviewee, their interviewing technique (including appropriate use of open or closed questions, and the structure of the interview), communication skills (including appropriate use of language and clarity of questions), and maintenance of rapport. Students rank order their interviews from the best to the worst. They also complete a one page summary of their general proficiency in interviewing, noting the areas in which they need to concentrate on in the future, and stating how they intend to improve their interviewing and communication skills in the short term.
Assignments are assessed by listening to samples of the tapes, and noting the interviewees' and interviewers' evaluations in comparison with the tapes.

Academic staff assessing the taped interviews have been impressed by the improvement shown by many students over the course of the eight months during which they complete the assignment. An opportunity for feedback is provided for doubtful students - they may submit a tape at any time, and receive evaluative comments from the course coordinator. Students take advantage of this opportunity, with noticeable improvement in their skills. One student indicated that he had completed twenty interviews before obtaining six which were of the requisite standard, indicating the advantages of feedback, self-evaluation and opportunities for practice.

Observed Clinical Interview. The second requirement for Medical Communication II is assessment of students in a hospital setting in an observed clinical interview (they spend one day per week in teaching hospitals in third year). The interviews assess the students' ability to communicate with a patient in the framework of taking a medical history, including their ability to ask appropriate questions using an appropriate technique, to ensure questions are understood by the patient and that the student understands the response. The interview is of 10 to 15 minutes' duration, followed by the recording of the results in writing in a prescribed case history format. Students are allotted half an hour to write down the information they have gathered.

The observed clinical interview and the taped interviews are evaluated by different academic staff. There is not total agreement upon those students who fail to satisfy the requirements, possibly because the two tasks assess somewhat different sets of skills. In 1992, ten students failed to meet the requirements of one or both tasks. Four students with bare passes on the observed clinical interview were judged as unsatisfactory on the taped interviews. Three students who failed the taped interviews were clearly satisfactory on the observed clinical interview. Three students who passed the taped interviews failed the observed clinical interview.

There was some indication that the observed clinical interview marks awarded by clinicians in the hospital were generous, and may not reflect genuine concerns about the interviewing skills of some students. For example, one student who was unsatisfactory on the tape assignment, and who obtained a pass mark on the observed clinical interview attracted the following comment from the clinical tutor:

> "I was tempted to give [an unsatisfactory result]. Language skills poor, patient had difficulty understanding, student had difficulty picking up less formal answers."

Such outcomes indicate that clinical assessors need to be reminded that they are not failing a student. They are therefore, not jeopardising that student's chances of progression to Year Four, but rather requiring that the student undertake further interviewing tasks in order to satisfy the Faculty's requirements. Clinical assessors may feel more comfortable about recommending the reassessment of students whose performance may place patients at risk when it is emphasised that students have several opportunities finally to satisfy the requirements.

Academic Staff Time Required for Assessment

The assessment procedures described for Medical Communication I and II do involve expenditure of time by academic staff; and, of course, the administrative support required to schedule appointments, record results, and the like. However, the assessment is seen as an integral part of the teaching process itself, and it is observed that students devote considerable effort to developing the skills and knowledge required to satisfy the requirements.

In Medical Communication I, the first two assessment interviews are conducted by a staff member of the Department of Behavioural Sciences in Medicine at the level of lecturer and above. The interviews, including examination of the student's written report of the interview, can be scheduled at the rate of four per hour. The 289 interviews in the first two rounds of testing in 1992 occupied approximately 80 hours of the time of senior academic staff. Supplementary examinations using the one-way viewing facility are more costly and each one involves three senior staff and a trained interviewee. These examinations, including scruteny of the student's written report and the examiners' group discussion, average about two per hour. The supplementary interviews thus require a total of about two hours of staff time per interview.

In Medical Communication II, a student's tapes and self evaluation are assessed in a two tier procedure. At the first level, the tapes of all students are sampled by a member of staff who is below the level of lecturer, and the examiner marks several Likert scales of feedback and offers brief comments on a student's performance. This is scheduled at the rate of about two per hour. Approximately 25% of the least satisfactory are culled for the attention of more senior examiners. At the second tier, the culled tapes are examined by a more senior staff member who follows the same procedures and works at about the same rate. The work of a failing student is referred to a second senior examiner for confirmation.

The Observed Clinical Interviews, part of the assessment of Medical Communication II, take place in the teaching hospitals and are carried out by a large number of clinical instructors. The staff time required for these observations is approximately 20 minutes per interview.

Students who do not satisfy the requirements of Medical Communication II are offered supplementary examinations, similar to the supplementaries of Medical Communication I. On average, Medical Communication II requires a total of about one hour of academic staff time per student.

Conclusions

The Faculty of Medicine enrols students from non-English speaking backgrounds who are fairly recent immigrants to Australia. Many of these students have difficulties in developing effective communication with patients and academic staff. It is important to identify these students early in the course, so that special support can be provided by the Learning Assistance Centre. The STAL and the WLPB instruments have been found useful in identifying students in need of this assistance. The Faculty has introduced new curricula and assessments of communication to ensure that students are able to communicate effectively before they can advance into the years of the course which involve considerable clinical contact. The new curriculum and the need to satisfy these new assessment requirements have been shown to motivate students to improve their communication skills.

References

Farnill, D., Hayes, S.C., & Barrett, S. (1992). *Demographic and motivational profile of students admitted to medicine 1 in 1992*. Sydney, Australia: University of Sydney, Department of Behavioural Sciences in Medicine.

Hayes, S.C., & Farnill, D. (1992). A study of the concurrent validity of the screening test of adolescent language with recent immigrants. *Psychological Reports, 71*, 175-178.

Hayes, S.C., & Farnill, D. (1993). Medical training and English language proficiency. *Medical Education, 27*, 6-14.

Prather, E.M., Breecher, S.V.A.,Stafford, M.L., & Wallace, E.M.(1980). *Screening test of adolescent language*. Seattle,WA: University of Washington Press.

Sefton, A.J., (1990). Selection of medical students. *Medical Journal of Australia, 153*, 440-441.

Woodcock, R.W. (1984). *Examiner's manual, Woodcock language proficiency battery - English form*. Allen, TX: DLM Teaching Resources.

Annals of Community-Oriented Education
1994, Vol. 7, 329-340

The Learning Contract as an Effective Clinical Education Tool

P. Salvatori
McMaster University
Hamilton, Ontario, Canada

Abstract

The Batchelor degree course in Occupational Therapy at McMaster University includes an important segment when the students are placed in actual service situations which may be at considerable distances away from the University. Thus for the sake of quality control and as a deliberate educational device the students negotiate a contract with their supervisor. The processes and benefits, as well as the theoretical underpinning are discussed in this paper.

The undergraduate occupational therapy programme at McMaster University offers a problem-based learning curriculum within a student-centred environment. The clinical education component of the Batchelor of Health Sciences (Occupational Therapy) (BHSc(OT)) Programme is thus based on an adult education model and on principles of self-directed learning (Knowles, 1975), rather than an apprenticeship model or skills-training approach. Each student completes five six-week rotations of full-time clinical fieldwork in four specialty areas of practice (Child Health, Adult Physical Health, Adult Mental Health, Aging and Health) and a final clinical elective. To accomodate the current enrolment of 30 students in each of two years, the Programme uses more than 90 different fieldwork sites including, but not limited to teaching hospitals, community hospitals, industry, schools, home care programmes, rehabilitation centres, private clinics, nursing homes. While most of these clinical teaching sites are scattered throughout Ontario, some students also travel across Canada, the United States and even internationally for their clinical education experiences. Although each placement is determined with the student and considers each student's personal resources in terms of family contacts and finances, students are required to be prepared for at least one out-of-town placement during the Programme and to be responsible for the associated costs of travel and accomodation. Because of the wide geographical distribution of placements, and as most of the clinical preceptors are **not** university faculty member, it is essential that the method of student assessment be flexible, fair and consistent. Because of the student-centred curriculum, the clinical education objectives and assessment criteria must also allow for self-directed learning and self-assessment. The learning contract (Knowles, 1986) provides a flexible and useful organisational framework for both student and preceptor to facilitate student

Request for reprints should be sent to P. Salvatori, McMaster University, School of Occupational Therapy and Physical Therapy, Faculty of Health Sciences, Hamilton, Ontario, Canada L8N 3Z5.

learning. It also serves as a mechanism for assessing the student's performance in both a formative and summative sense.

A learning contract is a document drawn up by a student and his/her instructor or advisor which specifies " the knowledge, skills, attitudes and values to be acquired by the learner (i.e. learning objectives), how these objectives are to be accomplished (i.e. learning resources and strategies), the target date for their accomplishment, what evidence will be presented to demonstrate that the objectives have been accomplished, and how this evidence will be judged or validated" (Knowles, 1986). Although the learning process is a shared responsibility between student and instructor, the locus of control clearly rests with the student who is responsible for identifying his/her personal learning needs and pursuing his/her objectives. The instructor or supervisor provides a balance between learning oppportunities and student expectations; each student then develops a specific learning contract within this context. The instructor also acts as a guide to shape the student's thinking about the options available in designing appropriate and realistic learning experiences to meet the learner's individual needs. The details of each student's contract will, therefore, vary according to the experience and developmental level of the learner. Assessment of learning is also a shared responsibility between learner and instructor; it should occur at both a formal and informal level at regular intervals throughout the entire period of the contract.

Contract learning is not a new concept. In the early 1900s, Maria Montessori was using discovery learning approaches and individualized instruction with young children (Montessori, 1912, 1966). Similar approaches, although outside the educational mainstream, were being used in elementary and secondary schools in the United States in the 1920s (McKeachie and Kulk,1975). In 1919, Helen Parkhurst introduced the idea of using contracts for grading students of nursing (de Tornay and Thompson, 1982); the Dalton Plan, as this approach came to be known, met with much criticism, however, as it stressed quantity rather than quality of learning (Bockman, 1973). While the Keller Plan of individualized instruction was introduced at the college level in 1964 (Bockman, 1973), it is Malcolm Knowles who is considered the real forefather of contract learning. His theory of andragogy stresses self-discovery, self-directed learning, problem-solving, self-evaluation and critical feedback (Knowles, 1970). Self-directed learning is described as a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes (Knowles, 1975). It is this concept of self-directed learning that provides the theoretical basis for the use of learning contracts.

Contract learning also finds roots in cognitive psychology and is consistent with Bruner's theory of self-discovery (Bruner, 1961), Gagne's work on guided expository learning (Gagne, 1977), Ausubel's theory of advance organizers (Ausubel, 1968 and 1978), Maslow's theory of self-actualization (Maslow, 1954) and Dewey's theory of experiential learning (Boydston, 1981). The scientific basis, however, for the use of learning contracts in the education of health professionals is more difficult to demonstrate. A review of the literature reveals only a few descriptive accounts of contract learning, and most of these are in the field of nurse education (Bouchard and Steels, 1980; Richardson, 1987; Gibbon, 1989; Schutzenhofer and Cannon, 1986; Harrison, 1992; Donaldson, 1992; Solomon, 1992; Gaiptman and Anthony, 1989). While the evidence in support of the use of contract learning from both a student and faculty perspective is consistent in the literature, more scientific studies are needed to validate the learning contract as an effective learning and evaluation tool.

The broad clinical education goals in the BHSc(OT) Programme at McMaster University (Appendix 1) have been determined by the curriculum planners in the light of national Standards for the Accreditation of Occupational Therapy Education Programmes in Canada, trends in the delivery of health care, demographic trends, the current scope of practice, and future directions for the profession. These goals apply to all five clinical fiedwork placements and are considered non-negotiable in the broadest sense. For each placement, the student is expected to develop a learning contract that adapts the Programme goals and his/her personal learning objectives to the specific clinical setting, with consideration of the client populations, clinical programmes, and available learning opportunities unique to that setting. All Programme goals may not be appropriate for all settings, but all must be considered, and appropriate rationale must be provided if any are not included in the learning contract. The learning contract thus provides a mechanism to blend the imposed requirements of the Programme, the opportunities within the clinical facility, and the learner's personal goals and objectives. It also enables the student to choose his/her own way of achieving the objectives and measuring his/her progress.

The grading system (Table I) and evaluation criteria (Appendix 2) are based on university policy and have been expanded by the Programme to apply to clinical fieldwork. The percentage equivalents for the letter grades are used primarily for academic coursework and are provided here only as a guideline to aid interpretation of the letter grades. The clinical preceptor and the student must agree on what evidence is necessary to successfully complete each objective at a pass (or C level) and then, what additional evidence would be necessary for
an **A** or **B** grade. The final "course" grade represents a global rating of overall student performance and is determined at the time of the final assessment.

The effective use of learning contracts requires adequate preparation, training and ongoing support for both students and preceptors. The Programme's Clinical Education Coordinator is responsible for:

a. approving all clinical placement sites;
b. matching student needs and requests to available sites and preceptors;

c. preparation of handout materials which describe the educational philosophy and the process of contract learning;
d. orientation and training of students and preceptors through hands-on workshops, telephone conversations, faxing drafts of contracts back and forth for editing and approval;
e. provision of ongoing support with personal on-site visits or teleconferencing to deal with any problems or concerns that arise throughout the placements;
f. assigning final clinical grades following a review of the learning contracts and discussions with the students and/or preceptors.

Table I. BHSC(OT) programme grading system

Letter Grade	**Percentage (%)**
A+	90 - 100
A	85 - 89
A-	80 - 84
B+	77 - 79
B	73 - 76
B-	70 - 72
C+	67 - 69
C	63 - 66
C-	60 - 62
D	50 - 59 (remedial work required)
F	< 50 (fail)

A letter grading system is used to evaluate student performance.

Given the wide geographic distribution of placements, as well as the associated difficulties involved in training preceptors, the Clinical Education Coordinator must use strategies for communication and follow-up that do not entail face-to-face contact. It should be noted that neither the preceptors nor the clinical facilities receive any form of financial compensation for student education. Also, any costs entailed in long distance telephone calls, postage, etc. are usually shared between the Programme and the clinical sites. It is important, therefore, that ongoing support from the Programme is readily available to the preceptors, in order to maintain their commitment to student education.

Development, implementation and evaluation of contracts

1. The clinical preceptor orientates the student to the clinical facility and/or clinical programme.
2. The student determines his/her learning needs, based on the specific nature and requirements of the clinical setting , as well as his/her past experience and current level of knowledge and skill.
3. The student outlines specific learning objectives in relation to the domains of knowledge, skill and professional behaviour. These objectives must be clear and measurable. The preceptor assists the student in refining the objectives to ensure that they are sufficiently challenging but realistic.
4. The student consults the preceptor to identify learning strategies (observation, discussion, role modelling, interviews, community visits, team consultations, shadowing experiences, etc.) and potential learning resources (books, journals, audio-visual materials, resource people, community agencies, etc.) to choose learning experiences that are best suited to his/her learning needs and personal learning style.
5. The student specifies what will be used as evidence of accomplishments (written reports, direct observation of performance, presentations, activity log, etc.).
6. The student and preceptor determine how the evidence will be evaluated (i.e. what is the required performance, what standards are being used to measure performance and under what conditions will learning take place). The grading scheme for each objective must clearly specify what evidence must be provided for an **A**, **B**, **C**, **D**, or **F** grade.

   The learning contract should be developed by the student and approved by the clinical preceptor by the end of Week One of the placement.
7. Throughout the placement, the student and preceptor meet regularly to assess student performance (daily or weekly feedback sessions, as well as formal mid-term and final assessment sessions). In preparation for formal assessments student and clinical preceptor should prepare documentation to validate their assessments. Each objective should be assigned a grade with verbal and written feedback that reflects that grade.
8. At the time of the final assessment when student and preceptor sit down together, after review of each contract objective and assignment of individual grades for each objective, the final placement grade of A to F is negotiated. The final grade is a global rating of competence based on the student's overall performance in terms of initiative, speed, amount of direction and supervision required, as well as successful completion of his/her clinical objectives in terms of both quantity and quality, and the importance placed on certain objectives or behaviours.

   For example, a student may have been assigned many As or Bs for individual objectives, but concerns remain regarding "awareness of safety issues" or "professional behaviours": Because of the value placed on these types of objectives, the final grade assigned may be a C or a D. The final overall grade assigned should address the question: Does the student possess the knowledge, skills and professional behaviours necessary to manage clients in this specific area of practice at a basic level of competence? The difference between the unacceptable "F", poor "D", satisfactory "C", good "B", and excellent "A", is thus in the level of overall competence as demonstrated throughout the placement. When the preceptor has assigned the final grade, the student and preceptor sign the contract to signify that the evaluation took place and the final grade was discussed. However, the student's signature does not necessarily imply acceptance of the grade; usual university policy includes an appeal process.

9. The preceptor submits the recommended grade and returns the signed contract to the Clinical Education Coordinator (CEC).
10. The CEC reviews all student contracts in terms of completeness, comprehensiveness, consistency of grades assigned and written feedback provided, and then prepares final grades for approval by the Programme Academic Review Committee (PARC). Although infrequent, grade changes may occur at this level. Throughout this review process, the CEC also identifies students who are in difficulty and require follow-up.
11. The CEC meets with individual students as appropriate to design an individual learning plan and determine the mechanism for follow-up and monitoring of progress. In all cases where a D grade is assigned, the student and CEC meet to develop a remedial programme using another formal learning contract. Students assigned an F grade are required to withdraw from the Programme.

Discussion

Because of the individualised nature of contract learning and the diversity of clinical placements, every learning contract is different. Exerpts from sample learning contracts can be found in Appendices 3 and 4. It should be noted that two clinical objectives have been developed using different approaches to the grading scheme; both approaches are acceptable and can be negotiated between the student and the preceptor.

Numerous advantages of contract learning have been identified in the literature and have been supported by our personal experience over the past three years since the BHSc(OT) Programme admitted its first students in the autumn of 1990. Benefits include:

1. supports the learner's self-image as an autonomous adult and acknowledges the student's background of personal experience and expectations for the future which help him/her to identify personal learning needs (Bouchard and Steels, 1980; Ogborne and Killer, 1984);
2. promotes student's responsiblity for learning and accountability for performance;
3. promotes the development of organizational, priority-setting and time management skills;
4. builds mutual trust and respect between student and instructor (Solomon, 1992);
5. enhances motivation and commitment of students to the learning process;
6. allows for self-monitoring of progress and more objectivity in self-assessment;
7. decreases competition among students because of individualization of learning needs and experiences;
8. promotes competition within self to meet self-formulated standards (Bouchard and Steels, 1980);
9. promotes habits conducive to life long learning (Ogborne and KIller, 1984; Solomon, 1992);
10. maximizes the learning opportunities unique to each clinical placement site (Richardson, 1987);
11. provides a vehicle for communication between student and preceptor (Bouchard and Steels, 1980);
12. ensures ongoing personalised feedback between student and preceptor;
13. promotes expression of creativity by inviting and encouraging students to take risks in designing their learning experiences (Bouchard and Steels, 1980);
14. is sufficiently dynamic and flexible to allow for renegotiation of objectives if necessary;
15. provides a clear record of the learning process and the student's progress towards meeting objectives;
16. increases self-awareness and self-esteem (Ogborne and Killer, 1987);
17. simplifies the process of assessment;

18. offers the preceptor a more challenging role as facilitator versus "teacher".

Despite its numerous benefits, contract learning has some disadvantages:

1. time and energy required for contract development can lead to frustration for both student and preceptor (Bouchard and Steels, 1980; Donaldson, 1992);
2. the student may feel pressured to meet self-formulated standards;
3. student may elect a lower standard of achievement, in order to ensure success;
4. the process is too structured and does not allow for incidental learning;
5. a significant attitudinal change is required in the traditional roles of student and teacher (Richardson, 1987; Donaldson, 1992);
6. anxiety may increase for the student who may be insecure or hesitant in making his/her own decisions;
7. there is potential for abdication on the part of the teacher;
8. the process is unfair as it is too individualised and not standardised in terms of equivalence of workload or expectations among students (Bouchard and Steels, 1980);
9. there is potential for disagreement between student and preceptor regarding the grades assigned.

In the author's experience with contract learning, the issue of time and energy required to develop the contract is the only disadvantage that has been identified consistently by both students and preceptors. However, both groups feel that the gains made in the assessment process more than compensate for the time spent in the initial stages of contract development. Also many of the other disadvantages do not appear to arise because of the Programme's existing training and support mechanisms for both students and preceptors. To date, 360 contracts have been completed by the OT students, and there have been only three cases of disagreement with regard to the final student grade. All three cases were successfully resolved without a formal appeal; two grades were adjusted upwards and one grade was adjusted downward with the student's agreement.

Conclusions

In a health professional, student-centred curriculum, where self-directed learning and individualisation of learning experiences are valued, learning contracts provide a compatible and viable framework for learning and assessment in a clinical setting. Contract learning is sufficiently dynamic and flexible to allow students to meet Programme goals as well as personal learning objectives. In order to reduce the frustration and anxiety often associated with contract development, both students and preceptors require training, written guidelines and ongoing support as they wrestle with the change in traditional student and supervisor roles and become comfortable with the contracting process. Our experience to date indicates that contract learning in the clinical education component of the BHSc(OT) Programme at McMaster University has been implemented successfully. The role of the university-based Clinical Education Coordinator has been the key to success. Plans for the future include the development of a generic self-directed learning module on contract learning for both students and preceptors to use, and ongoing research to validate the learning contract as an effective learning and evaluation tool in clinical education.

References

Ausubel, D.P. (1968). *Educational psychology: A cognitive view.* New York, NY: Holt, Rinehart and Winston.

Ausubel, D.P. (1978). In defense of advance organisers: A reply to the critic. *Review of Educational Research, 48,* 251-257.

Bockman, J.F. (1973). Contracting for learning outcomes. *NASSP Bulletin, 57,* 20-24.

Bouchard, J., & Steels, M. (1980). Contract learning: The experience of two nursing schools. *Canadian Nurse, 76(1),* 44-48.

Boydston, J.A. (1981). *John Dewey: The later works.* Carbondale, Ill: Southern Illinois University Press.

Bruner, J.S. (1961). The act of discovery. *Harvard Educational Review, 31(1),* 21-32.

de Tornay, R., & Thompson, M. (1982). Using learning contracts. In: R. de Tornay, & M. Thompson (Eds.). *Strategies for teaching nursing.* New York, NY: John Wiley.

Donaldson, I. (1992). The use of learning contracts in the clinical area. *Nurse Education Today, 12,* 431-436.

Gagne, R.M. (1977). *The conditions of learning.* (3rd ed.) New York, NY: Holt, Rinehart and Winston.

Gaiptman, B., & Anthony, A. (1989). Contracting in fieldwork education: The model of self-directed learning. *Canadian Journal of Occupational Therapy, 56(1),* 10-14.

Gibbon, C. (1989). Contract learning in a clinical context: Report of a case study. *Nurse Education Today, 9(4),* 264-270.

Harrison, B. (1992). Reflections of a distance education facilitator. *Nurse Education Today, 12,* 182-191.

Knowles, M. (1970). *The modern practice of adult education.* New York, NY: Association Press.

Knowles, M. (1975). *Self-directed learning: A guide for learners and teachers.* New York, NY: Association Press.

Knowles, M. (1986). *Using learning contracts.* San Francisco, CA: Jossey-Bass Publishers.

Maslow, A.H. (1954). *Motivation and personality.* New York, NY: Harper and Row.

McKeachie, W., & Kulk, J. (1975). Effective college teaching. *Review of Research in Education, 3,* 165-209.

Montessori, M. (1912). *The Motessori method.* New York, NY: Stokes.

Montessori, M. (1966). *Spontaneous activity in education.* New York, NY: Shocken Books.

Ogborne, W.L., & Killer, D.V. (1984). Learning contract in family medicine training. *Family Practice, 1(2),* 117-121.

Richardson, S. (1987). Implementing contract learning in a senior nursing practicum. *Journal of Advanced Nursing, 12,* 201-206.

Schutzenhofer, K.K., & Cannon, S.B. (1986). Moving nurses into the political process. *Nurse Educator, 11(2),* 26-28.

Solomon, P. (1992). Learning contracts in clinical education: Evaluation by clinical supervisors. *Medical Teacher, 14,* 205-210.

APPENDIX 1

BHSC(OT) Programme Clinical Education Goals

Knowledge and skills:
The student will:
1. apply current theories of occupational therapy, models of practice and frameworks of practice as appropriate to the clinical setting;
2. apply the principles of clinical measurement in the evaluation of client performance and effectiveness of intervention;
3. develop and demonstrate skill in interpretation of assessment findings and problem identification;
4. develop and demonstrate skill in programme planning;
5. develop and demonstrate skill in programme implementation;
6. demonstrate verbal and written communication skills;
7. facilitate interaction and a coordinated approach to care with other health care professionals, care givers and team members;
8. establish rapport and demonstrate empathy and sensitivity to the needs of clients and their families;
9. demonstrate an awareness of and take opportunities to educate others about the role of Occupational Therapy;
10. participate in clinical research projects as the opportunity arises;
11. demonstrate an understanding of the importance of safety in clinical practice and exercise judgement in carrying out duties.

Professional behaviours:
The student will:
1. take responsibility for his/her own learning;
2. demonstrate clinical reasoning by integrating knowledge, skills and experience in order to manage clinical cases;
3. develop skills of self-appraisal and be open to giving and receiving feedback;
4. demonstrate professional behaviour at all times, including responsibility to client confidentiality, initiative, judgement, respect for the dignity of each individual, follow through and completion of duties (refer to the Code of Ethics);
5. demonstrate an awareness of an advocacy role in enhancing the client's quality of life.

APPENDIX 2

Clinical Education Evaluation Criteria

A	80 - 100%	The student consistently demonstrates an **excellent** knowledge base and performance of skills and behaviours with proficiency, speed, initiative and adaptability to clinical situations. The student may require supervision but no intervention. The student responds immediately to change performance following feedback and demonstrates responsibility and self-direction at all times.
B	70 - 79%	The student consistently demonstrates a **good** knowledge base and performance of skills and behaviours. The student may require minimal supervision and occasional intervention. The student responds quickly to change performance following feedback and demonstrates responsibility and self-direction in all clinical situations.
C	60 - 69%	The student consistently demonstrates a **satisfactory** knowledge base and performance of skills and behaviours. The student may require moderate supervision and frequent intervention. The student gradually responds to change performance following feedback and demonstrates responsibility and self-direction most of the time.
D	50 - 59%	The student demonstrates a **poor** knowledge base and/or **poor** performance of some components of skills and behaviours. The student may require ongoing supervision and intervention. The student attempts to change performance following feedback and demonstrates responsibility and self-direction some of the time.
F	< 50%	The student demonstrates an **unacceptable** knowledge base and/or **unacceptable** skills and behaviours. The student may require constant supervision and intervention. The student demonstrates minimal evidence of responsibility, self-direction, or ability to change in response to feedback.

APPENDIX 3

Exerpt from Sample Learning Contract

Clinical Objective	Resources and Strategies	Evidence of Accomplishments	Grading Scheme
To develop advanced skill in neurodevelopmental assessment, interviewing and problem identification of children age 0 - 12 years.	- Library books and lecture notes from Paediatrics course on Neurodevelopmental Theory and assessment tools. - Department assessment forms. - Index Medicus and journals to determine reliablity and validity of assessment tools. - Standardized assessment tool manuals. - Paediatrician, physiotherapist and OT on staff (name). - Student will practise interviewing and administering assessments. - Observe therapist as role model. - Seek feedback from therapist re: specific aspect of technique. - Student will initiate and set up sessions with therapist observing performance. - Initiate discussion with therapist re: technique and problem I.D. after assessment.	1. The assessment will be a positive experience for the child. 2. Student will demonstrate knowledge of all components of assessment. 3. Student will administer all components of the assessment correctly. 4. The assessment will be well organized and take no more than 45 minutes to complete. 5. The student will be able to interpret findings and identify all main problem areas within 1 hour of completion. 6. Immediately identify problem areas after completion of the assessment. 7. Identify significant problem areas during assessment and adapts the assessment to explore these areas further, within the initial session. 8. The child enjoys the assessment session and has fun. 9. Plan appropriate Rx goals, based on independent assessment of child.	`A' All evidence met. `B' Evidence 1 through 9 Inclusive. `C' Evidence 1, 2, 3, 5 must be demonstrated. `D' Evidence for `pass' not completed. `F' No evidence met.

BEST COPY AVAILABLE

APPENDIX 4

Exerpt from Sample Learning Contract

Clinical Objectives	Resources and strategies	Evidence of Accomplishments	Grading Scheme
Demonstrate professional behaviour at all times, including responsibility to the client, confidentiality, initiative, judgement, respect for the dignity of each individual, follow through and completion of duties (refer to Code of Ethics).	Professional code of ethics and policies and procedures of clinical facility. Observing other therapists. Asking for feedback from other professionals, clients, and families.	1. Arrives on time and prepared for all activities. 2. Uses time effectively and efficiently. 3. With direction from preceptor, takes responsibility for establishing own working schedule and completing all assigned duties. 4. Conducts appropriate research before proposing options for assessment or treatment. 5. Protects client confidentiality when outside the team setting. 6. Shows concern for clients' dignity (e.g. not exposing body unnecessarily during physical assessment). 7. Treats other professionals with respect, both directly and when speaking of them. 8. Follows facility procedures and professional code of ethics.	‘A’ 1 to 8 completed with independence, consistently demonstrating professionalism in all his/her functions. ‘B’ 1 to 8 completed with minimal supervision, requiring occasional instruction regarding proper professional conduct. ‘C’ 1 to 8 completed with moderate supervision, requiring frequent intervention regarding proper professional conduct. ‘D’ 1 to 8 completed with on-going supervision and intervention regarding proper professional conduct. ‘F’ 1 to 8 completed at an unacceptable level.

BEST COPY AVAILABLE

Annals of Community-Oriented Education
1994, Vol. 7, 341-348

Computer Assisted Training Programme: A Learning Tool in a Problem-Based Learning Curriculum

A. Pinto, F. Piccinno, R. Guerra, G. De Virgilio, E. Materia, A.M. Ahmed
Istituto Superiore di Sanità
Rome, Italy

Abstract

The International Course for Primary Health Care Managers at District Level in Developing Countries (ICHM) aims to train health managers in planning, implementing, monitoring and evaluating Primary Health Care (PHC) programmes at district level. The course adopts a Problem-Based Learning (PBL) approach but also includes more traditional teaching-learning sessions. Epidemiology and biostatistics have always been a major component of the course. In the early years concepts and skills were transmitted through lectures, exercises and seminars. This arrangement was somehow in contrast with the main philosophy of the training programme.

In order to accommodate the trainees' learning needs, a Computer Assisted Training Programme (CATP) in Epidemiology and Biostatistics has been developed for use during the residential semester. The trainees are free to arrange their own working schedule for using the package, both in terms of time and learning objectives. CATP, therefore, represents one more resource in the PBL cycle, in addition to the library and resource persons.

The evaluation of the first two years' experience with this new learning tool in a PBL curriculum shows encouraging acceptance by the trainees and achievement of learning objectives.

Introduction

The use of computer assisted learning in the form of Computer Assisted Training Programmes (CATP) is being progressively adopted in various teaching institutions. The experience of ICHM in the use of a CATP and its preliminary evaluation by a group of trainees is here presented.

Postgraduate students, who come back to epidemiology and biostatistics several years after their formal studies, may find this hard going. Moreover, in a multi-professional course, such as the International Course for Primary Health Care Managers at District Level in Developing Countries (ICHM), some participants may suddenly find that their knowledge of the subject is inadequate and that recently developed techniques are totally unfamiliar to them. It is, therefore, necessary to offer learning opportunities and instruments that are attractive and effective for the achievement of the trainee's own learning

Requests for reprints should be sent to A. Pinto, ICHM staff member, Istituto Superiore di Sanità, Aula Missiroli, Viale Regina Elena 299, 00161 Rome, Italy.

objectives. The use of computer technology is generally accepted as increasing the interest and involvement of the learner.

The Programme

The CATP in epidemiology and biostatistics is composed of ten modules covering descriptive epidemiology, demography, elementary biostatistics, inference principles, sampling and study analysis.

Each module can be opened from an electronic content page (Fig. 1). The user can choose any of the chapters offered in a module, according to his/her knowledge, interests or level reached during previous study sessions.

Work can be restarted automatically at the point where it was left when quitting the programme.

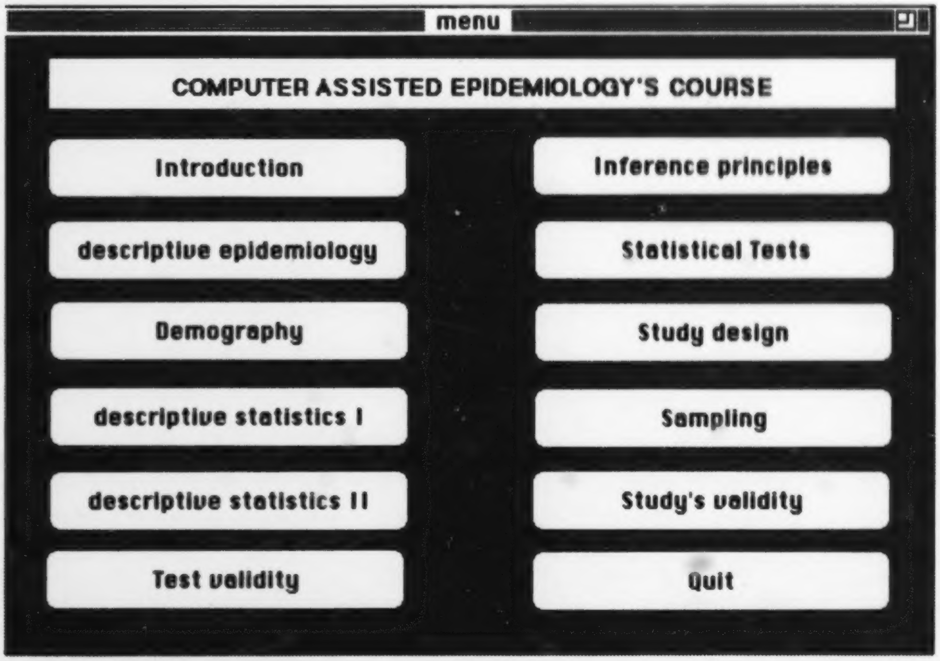

menu
COMPUTER ASSISTED EPIDEMIOLOGY'S COURSE
Introduction
descriptive epidemiology
Demography
descriptive statistics I
descriptive statistics II
Test validity
Inference principles
Statistical Tests
Study design
Sampling
Study's validity
Quit

Figure 1. The electronic content page

While working with the CATP, there is direct access to the computer calculator and its use to solve exercises in the modules. Similarly, the participant can enter the ICHM library retrieval system without leaving the study environment. This is particularly critical when specific knowledge has to be checked or gained from papers or books made available in the electronic library of ICHM (Fig. 2). This means that curiosity generated by the content of CATP can be satisfied by searching (by key-words, title, author) for related documents in the library's electronic catalogue with some 7,000 items and direct access to MEDLINE on CD-ROM.

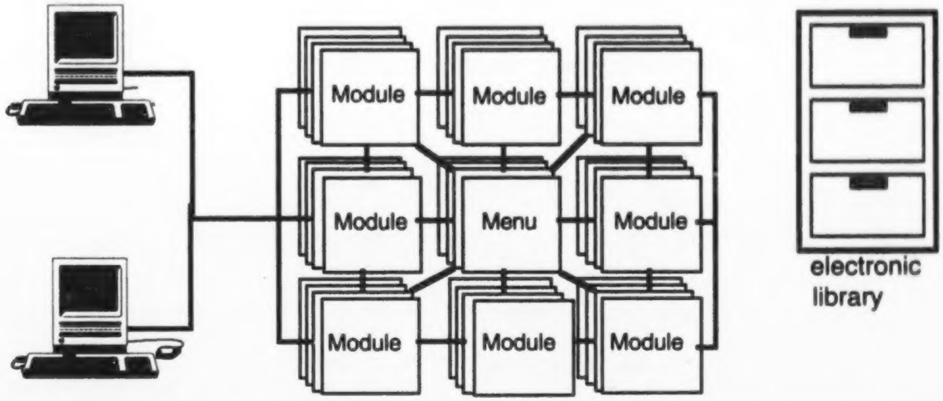


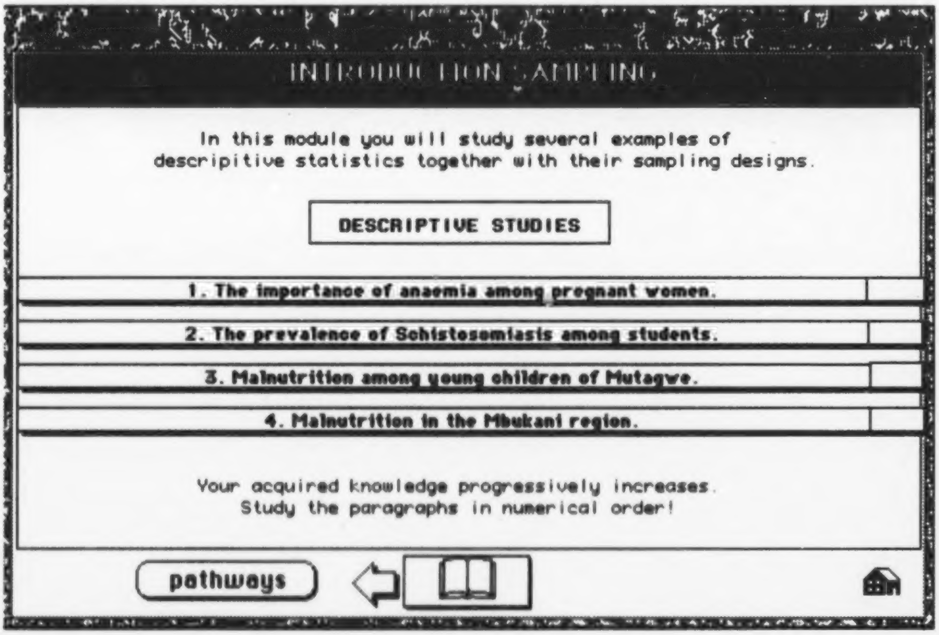
Figure 2. The electronic library of ICHM

The progressive acquisition of knowledge and skills is continually assessed by its immediate application through the practical exercises in each module; the user cannot proceed in the chapter, unless the exercise has been completed satisfactorily.
The modules are independent of each other, so that trainees can individually determine their own sequence in the CATP according to their particular learning needs (Fig. 3a and 3b).

As far as the technical aspects are concerned, the CATP has been created as Hypertext (Hypercard) based on a Macintosh interface. This package is easy to use and graphically more appealing than its DOS-based brother at the Antwerp School of Tropical Medicine which developed the first version of the package (Piccinno et al., 1992; Horney, 1993).
Hypercard flexibility enables trainers to update easily the content of each module by expanding sections, modifying exercises and adapting the course content to different training needs and situations without being forced to rely on professional and expensive programmers.
Explanations on how to use the package are given in an introductory tutorial module as part of CATP (Fig. 1), so that assistance from the facilitator can be reduced to a minimum. However, considerable discussion and requests for consultation are generated in content areas; this is seen as very positive, as it stimulates the use of different learning resources.
Among the main links with the PBL curriculum are the following:

- The trainee can decide what to study (e.g.: the learning objectives generated from the "problem" under study;
- the trainee is able to decide when to study and at what pace;

- continuous self-assessment is required which can in turn decide the trainee to request further expert assistance in specific content areas;
- CATP represents just one learning tool: it is able to generate further learning objectives that can be satisfied by the appropriate use of other relevant resources (staff, participants, documents);and
- it provides the foundation for the immediate use of newly acquired knowledge and skills through the exercises in the CATP.



INTRODUCTION SAMPLING

In this module you will study several examples of descripitive statistics together with their sampling designs.

DESCRIPTIVE STUDIES

1. The importance of anaemia among pregnant women.
2. The prevalence of Schistosomiasis among students.
3. Malnutrition among young children of Mutagwe.
4. Malnutrition in the Mbukani region.

Your acquired knowledge progressively increases. Study the paragraphs in numerical order!

Figure 3a. The internal navigation tool

Methods

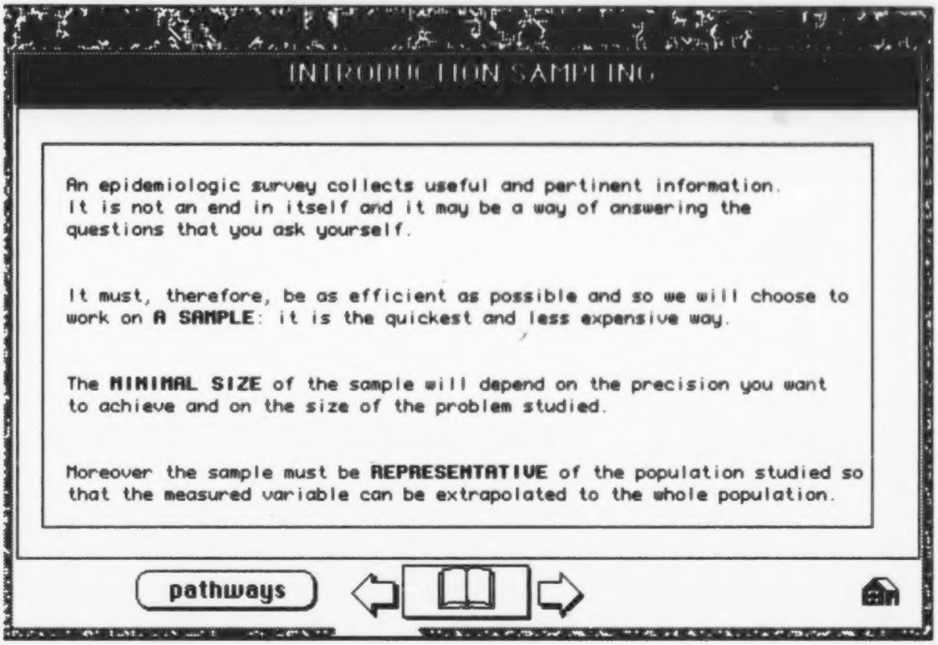
The CATP on epidemiology and biostatistics was tested in 1992 and included as part of the ICHM curriculum in 1993.

A questionnaire to evaluate the utilisation patterns and the appropriateness of the package over a period of five months was submitted to all participants.

Results

Of 23 respondents, 15 (65%) completed the questionnaire.

The mean of completed modules was 4, ranging from 2 to 8 (Fig. 4). The average time needed to complete one module was one hour and twenty minutes.



An epidemiologic survey collects useful and pertinent information. It is not an end in itself and it may be a way of answering the questions that you ask yourself.

It must, therefore, be as efficient as possible and so we will choose to work on **A SAMPLE**: it is the quickest and less expensive way.

The **MINIMAL SIZE** of the sample will depend on the precision you want to achieve and on the size of the problem studied.

Moreover the sample must be **REPRESENTATIVE** of the population studied so that the measured variable can be extrapolated to the whole population.

Figure 3b. The external navigation tool

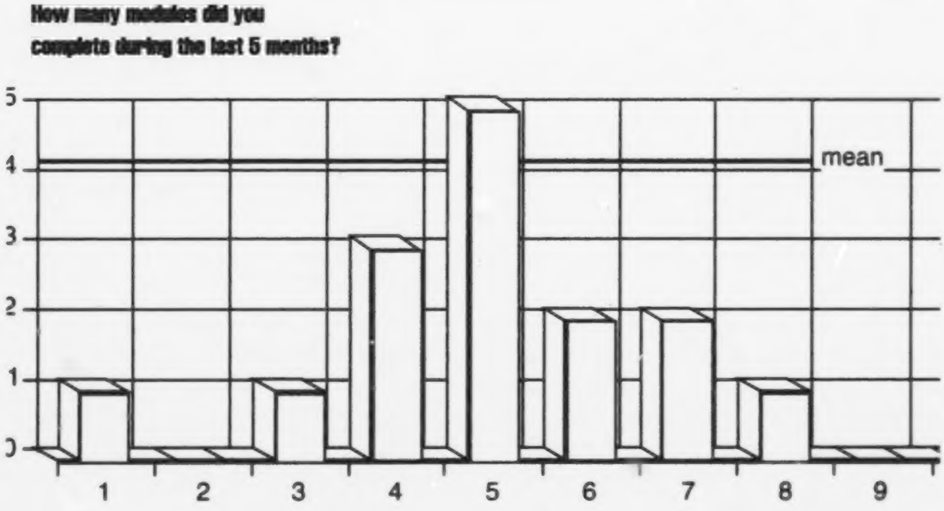


Figure 4. Number of modules completed by each student (15)

BEST COPY AVAILABLE

Great interest was shown in the module on demography; 47% of respondents thought this module the most interesting and useful.
The module on statistics II was identified as the most complex and difficult (35%).
90% of respondents supported the use of CAPT as a tool to facilitate the learning process in Epidemiology and Biostatistics (Fig. 5).

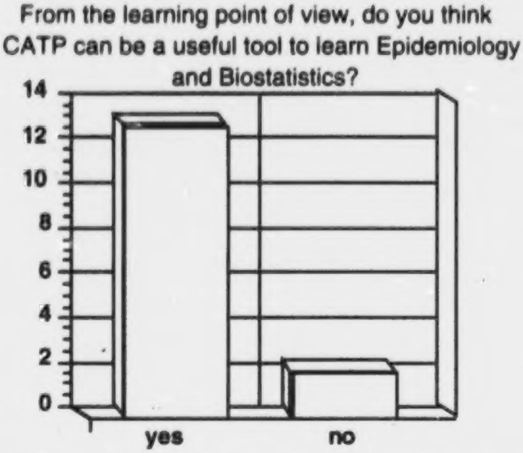


Figure 5. Perceived usefulness of CATP in the study of epidemiology and biostatistics

93% of the respondents would have liked to have a written manual to complement the computer programme and introductory seminars at the beginning of each module. Only 45% were stimulated to consult other texts.
89% of the respondents recognised that CATP was a potentially powerful tool for distance education in their own countries.
Among the major constraints perceived by the respondents was lack of time for the use of the CAPT and the need for a written manual.

Discussion

For the majority of participants this was the first time they had encountered computer assisted learning. For many this was just the first contact with a computer.
The relatively low response rate may be related to low utilisation of the programme, or the fact that they were busy with other assignments when they were requested to fill in the questionnaire.
The average time of completion of individual modules was in agreement with the programmers' expectations. It reflected the "friendliness" of the interface and the ease of navigation provided by Hypertext.
Even so, respondents still complained of "lack of time". This was a common experience

throughout the course and it was possibly related to the general difficulty which trainees experience in a PBL curriculum when they have to organise and manage their own time.

The request to complement the programme with a written manual would allow them to continue their studies when the computer was not available (e.g. at home). However, this would risk that the tool could be regarded as a substitute for textbooks and relevant papers, rather than as an additional learning experience to complement and reinforce the acquisition of knowledge.

Rather than provide introductory seminars, the staff would prefer to assist the trainees while they use the tool and not before. On the one hand, this would ensure that the participants accept responsibility for setting their own learning objectives. On the other hand, staff support would be better tailored to tackle individual weaknesses, and thus target specifically any additional expert tutorials.

The high value of CAPT as an appropriate and inexpensive tool for distance education should be stressed. CAPT can play a key role in continuing education of health workers at intermediate level; microcomputers are widely available throughout the developing world, where they are only rarely used to their optimal value. Much stress is placed on the maintenance of hardware, while software-related aspects, particularly training, tend to be neglected. Users are simply given machines without appropriate training with emphasis on the real impact that computers can have on the management of their time, resources, communications, self-education, and allocation of resources, to mention only a few applications.

The quality of graphic presentation and user-friendliness play a major role in the acceptance of the programme.

The use of Hypertext and Hypercard has certainly contributed to the positive acceptance of this CATP. 73% of the respondents considered the graphic art of the CAPT appealing, and the majority recognised the demographic module has the most interesting because of its attractive graphic format, in spite of the sensitive issues presented.

Conclusions

Several studies of computer assisted teaching programmes have emphasized their crucial role in making the teaching/learning process more efficient and flexible (Darby, 1992). However, their use in PBL curricula appears to be still marginal. The CATP in use at ICHM has been developed to fit the PBL environment specifically. Modifications are in progress to introduce additional animation, a link with real-life images, as well as more colloquial and interactive contributions.

The use of CD-ROM allows for the use of very effective and appealing products especially in the area of simulation: sounds, animation and colours will be introduced at marginal costs, thus expanding the content especially in geographic health information systems and health resources allocation models.

As far as content is concerned much effort will be devoted in providing a more continuous use of what is learnt by adding exercises and comparisons with real life situations and with provision of model answers. The CATP will then include several other modules, such as a R.A.M. (resource allocation model) and a QUANTIDRUG (integrated epidemiological and drug management package).

References

Darby, J. (1992). Computers in teaching and learning in U.K. Higher education. *Computers and Education, Vol. 19,* 1/2.

Horney, M.A. (1993). Case studies of navigational patterns in constructive hypertext. *Computers and Education, Vol. 20, (3,)* 257-270.

Piccinno, F., Pinto, A., & Piva, P. (1992). Hypertext is a powerful and friendly tool for self education. *XIII International Congress for Tropical Medicine and Malaria., Abstract, Vol.2.* Pattaya, Thailand.

Annals of Community-Oriented Education
1994, Vol. 7, 349-354

Distance Learning of Clinical Epidemiology and Biostatistics

R.F. Heller
University of Newcastle
New South Wales, Australia

Abstract

The activities of the Centre for Clinical Epidemiology and Biostatistics were described in a previous Volume of the Annals (Heller, 1991). The present paper reports on the early results of the translation of the Centre's teaching to the distance learning mode. Courses now offered by distance learning include Diploma and Masters in Epidemiology (Clinical Epidemiology, Pharmacoepidemiology, Psychiatric Epidemiology and General Practice); Medical Statistics; Health, Social Science and Health Promotion.

Why?

Clinical epidemiology is designed for practising clinicians to develop a critical approach to their practice and to develop research skills for application to major health problems in the clinical or population setting. This means that many of those who wish to learn these skills are employed as health professionals. They would find it difficult or impossible to leave their jobs to study full-time, and it may not be possible for them to attend the part-time courses in the evening. Many who could benefit from a training in clinical epidemiology would thus not be able to receive it, particularly those with clinical call duties, those living in rural or remote areas or looking after a family. Professionals in mid-career may not be able to afford the loss of earnings associated with full-time studies. These are potent reasons for bringing the training to the student rather than the other way round.

How does it Work?

The teaching material consists of a series of modules. Each has an outline of the theoretical aspects, one or more exercises, and appropriate readings. Ten or more modules go to make up each subject, such as Epidemiology, Biostatistics, Health Social Science, Clinical Economics. These modules constitute the coursework component of the various Degree or Diploma offerings. Those who come to Newcastle read the modules and work on the exercises which are then discussed in tutorials. This structure makes distance learning quite feasible; all we do is to substitute the tutorials with individual discussions about the modules and exercises by mail. We have prepared 'model' answers to the exercises and progress assignments which we return together with appropriate comments to the student soon after he or she sends the progress assignments back to us. Marked assignments are the same as for those who are not distant learners, as are examinations to allow us to assess

---

Requests for reprints should be send to R. Heller, University of Newcastle, Faculty of Medicine, N.S.W. 2308, Australia.

progress. The examinations are held either in a local school or university or during one of the twice yearly 3-day Residential Workshops which are held in Newcastle.

Residential Workshops allow us to cover issues that are difficult to deal with at a distance. Some aspects of computing are more easily experienced face-to-face, as are discussions about critical appraisal of the literature (although this is a central aspect of many of the modules). Development of a research protocol is required, and it is useful to perform some of this face-to-face - both for contact with the tutor and to get input from the other 'students' during group discussions The most important reason for the Residential Workshops is to develop personal contacts. We can meet each other and get to know each other. One of the criticisms of the distance learning approach, made by colleagues in other institutions, is the reduced opportunities for the student to see the teacher as a role model. The intensive Residential Workshop contact allows for good relationships to develop - we meet four times in this way during the two years of the course and have frequent telephone contact in between. Not only have the contacts been continued between tutor and student, but between students. One of our first cohort started a newsletter which is not only hilarious but maintains personal and professional contacts within the network.

Our Students

a) Australian

Distance learning was started in 1991 with 15 brave individuals who were prepared to pay good money to enrol; the University insists that fees are charged for the course. In 1992 the enrolments increased to 27, and to 29 in 1993. There are more applications than enrolments; there is quite a large attrition before the course starts, when the financial implications are considered. The participants have included hospital based doctors of various specialties, general practitioners, community paediatricians, medical and non-medical members of Public Health units, biostatisticians, chiropractors, sociologists and anthropologists, and a whole range of practising health professionals (Table I). They have greeted the course with enthusiasm and have persisted with it surprisingly well. Apart from two, who were unable to pass the examinations, no one has dropped out. Some have taken a slower path by completing the coursework over three years or so. This is understandable in view of the heavy workload in addition to a busy professional life.

b) Overseas

Newcastle has been one of the training centres of the International Clinical Epidemiology Network (INCLEN) for the past decade. As most readers of the Annals will know, a number of medical schools in the developing world were chosen to have some of their brightest clinicians and other health professionals trained in clinical epidemiology, medical social science and biostatistics in one of four centres in Australia and North America.

Table I. Specialties of 77 participants 1991-1993

Anaesthesiology	1	Nursing	3
Biostatistics	7	Obstetrics/Gynaecology	2
Cardiology	1	Ophthalmology	2
Chiropractice	3	Orthopaedics	1
Community Medicine	2	Paediatrics	6
Cytogenetics	1	Pathology	1
Dentistry	2	Pharmacy	5
Diabetes	1	Physiotherapy	1
Emergency Medicine	1	Public Health	2
General Medicine	1	Psychiatry	1
General Practice	9	Psychology	2
Haematology	1	Radiotherapy	1
Health Promotion	2	Research Assistant	5
Health Social Science	1	Respiratory Medicine	3
Immunology	1	Rheumatology	1
Infectious Diseases	2	Surgery	4
Medical Information	1	Veterinary Science	1
Microbiology	1		

Including 9 Overseas Distance Learners

Before the training had been completed for two Chinese medical schools, it was decided not to take any more fellows for training from overseas due to a high attrition rate - economic conditions in China encouraging non-return. Around this time, the Newcastle Distance Learning Course was started, and it was decided to make it available outside Australia, in order to complete the Chinese training in Chengdu and Shanghai via this mode. Eight excellent young clinicians or biostatisticians were enrolled, and the Residential Workshops were held in China. Dr. Michael Phillips was employed as a part-time coordinator. He had trained as an undergraduate at McMaster University and later as an epidemiologist and psychiatrist. Dr. Phillips now directs a psychiatry research unit in central China. He helped during the Residential Workshops and ensured that assignments were returned on time, as well as helping with advice to all involved from his unique perspective. One of the Chinese Fellows left to attend a two year Cardiovascular Epidemiology Fellowship in the Netherlands but intends to complete the distance learning course on his return. The others remained engaged and passed all assignments and examinations.

A high calibre candidate from francophone Cameroon entered the Distance Learning programme in 1993. The programme was particularly well suited to this INCLEN candidate, as he was unable to leave his country for personal reasons. We have great hopes that this candidate will eventually act as a facilitator for the teaching of clinical epidemiology in francophone Africa.

Two new overseas cohorts were started in 1994 in Addis Ababa, Ethiopia and Harare, Zimbabwe. They are also part of INCLEN and, for different reasons, have not been able to undertake training overseas.

As part of our commitment to distance learning in Africa, residential workshops will be held for each of the cohorts. Two academics from the Centre travel to Africa to run these workshops. Eventually the two annual workshops are planned to be combined as residential meetings, held alternatively in each city.

Progress and Evaluation

Because the same assessment scheme is used for local and distant students, we are able to compare results. The grades achieved by distance learners are slightly better than those achieved by the others. It is possible that this reflects the type of person who enrols or the motivation inspired by the fees. Because participants could not be assigned at random to the two types of training and because it was not possible to ensured blindness in the assessment process, not too much can be made of this difference. We are, however, happy that the distance learners are not academically disadvantaged by their mode of tuition.

More important than grades, of course, are whether those who enrol achieve the overall objectives of the course. The two main aims are for the clinicians amongst the participants to use the principles of critical appraisal and, more importantly, for all the graduates to perform good quality research into major health problems. After completion of the coursework components for the award of a Diploma, graduates are encouraged to enrol in the research component towards the award of a Masters degree. The majority of our first graduates did enrolled in the Masters degree and are now undertaking the research. It is too early to see how many of the subsequent cohorts will do the same and how good the quality of the completed research will be. We know that good protocols have been designed and we wait to see if the research is completed and whether it will influence health policy.

Special Opportunities from the Distance Learning Mode

By developing and maintaining academic and personal contacts which can be shown to survive the tyrannies of distance, we need to see what opportunities may develop. We hope to continue these relationships into a series of collaborative research programmes which can tackle a range of health service research issues. A few grant proposals have been submitted already, and we hope to work on this aspect more actively as our experience grows. The network we are creating may serve to explore new teaching strategies and to develop research methodology in clinical epidemiology and related fields.

Although the initial development of a distance learning programme is expensive in terms of labour and material, the programme quickly becomes a cost effective method of educational support in areas where traditional teaching strategies would be prohibitively expensive. The developmental and on-going costs incurred by the Centre for Clinical Epidemiology and Biostatistics were as follows (values in parentheses represent the profit margin per student in Australian Dollars): For Australian distance learners in 1991, the initial year of the programme, $1,998.00 ($502.00) per student. In 1992, $2,412.00 ($388.00) per student. In 1993 $2,643.00 ($547.00) per student. In 1994 we have budgeted $2,907.00 ($693.00) per student. For the Chinese Distance Learning Programme and for the 1994 African cohort the developmental costs slightly outstrip the income from fees, due to the cost associated with flying our academics to overseas countries. However, the overall costs incurred by the Centre for the Chinese and African programmes are covered by funding arrangements under the INCLEN programme. The figures include salary, resources, administration, and all associated costs in the provision of material for Distance Learning Fellows.

In Australia we have several different fee scales based on the level and type of educational activity. The principal outlay of money for most students, both undergraduate and postgraduate is the Higher Education Contribution Scheme (HECS), a compulsory Australian Federal Government education charge. Payment of HECS can be deferred by taking out a "loan" through the Australian Taxation Office. A discount is also offered for up front payment of HECS. For Australians attending postgraduate courses at The University of Newcastle a full-time student in 1993 was charged $2,328.00 (deferred) or $1,746.00 (up front). The HECS charge for tuition will be $2,328.00 (deferred) and $1,766.25 (up front). In 1993 Overseas students studying in Newcastle were charged $15,000.00 for Diploma courses and $17,500.00 for Masters courses. For 1994 the fees for Overseas students will be increased by $600.00 for both Diploma and Masters courses. Distance Learning students pay the following scale of Fees: in 1993 Australian students paid $3,200.00 Overseas students (funded by aid agency) $4,800.00. Overseas students (private means) $6,000.00. For 1994 the fees for distance learning are as follows: Australian $3,600.00; prices for Overseas students remain at 1993 levels. All prices in Australian dollars.

As our teaching materials are being distributed across Australia and the world, we hope that our students will be able to use them as the basis for their own teaching. We have made a number of proposals for partnership arrangements with other institutions where our course might be offered first with joint supervision from our partners and then used as a basis for the development of their own courses.

The Future

We hope to be able to continue to offer distance learning education from Newcastle both within Australia and overseas.

We hope that these research and teaching networks will continue to grow and that we can join with other institutions in teaching partnership. We also hope to use the exciting developments in modern information technology to improve communications with our students both during the course and afterwards. Evaluation, improvement and further advances will be continued. Suggestions for further opportunities for developments or partnerships, and exchange of experiences, would be most welcome.

References

Heller, R. (1991). Centre for clinical epidemiolgy and biostatistics. *Annals of Community-Oriented Education, 4,* 99-102, Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Annals of Community-Oriented Education
1994, Vol. 7, 355-362

Illustrating Shared Ideas Using Hexagons

A. Donaldson and Ch. Edwards
University of Glasgow
Glasgow, United Kingdom

Abstract

Medical students are overburdened with facts to learn and subjects to master. The classes are large, and it is difficult to keep students alert to ensure learning in traditional lectures. This paper describes an alternative approach of facilitating the students' learning through the use of hexagon modelling. The approach involves active 'hands-on' participation by the students enabling greater exploration of their thinking while facilitating communication between all participants, staff and students. Students benefit by learning through their own and others' experience. The model can easily be adapted to teach many aspects of medicine.

Illustrating Ideas Using Hexagons

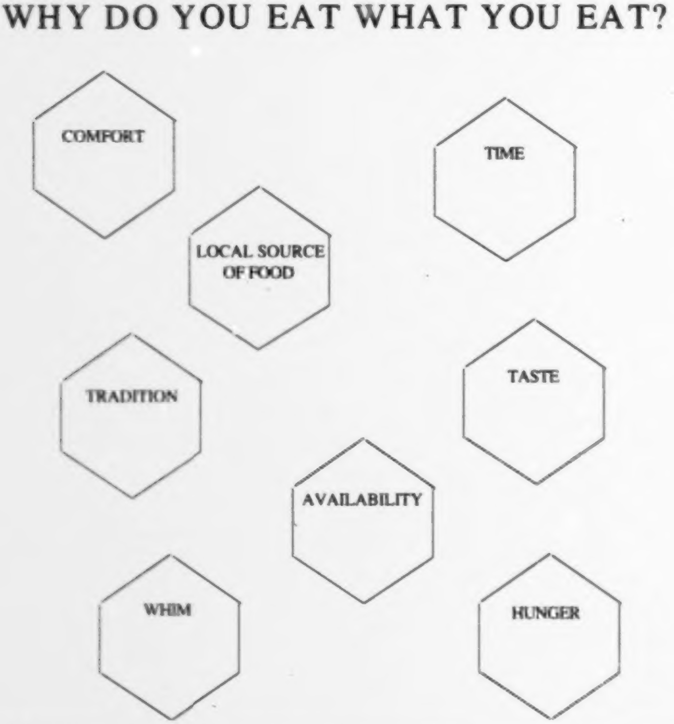
When a group of people come together to learn or solve problems, it is vital that they share their ideas with each other and form a group picture of the learning task which faces them. Representing ideas graphically with the help of a facilitator can greatly assist this process. By using the properties of coloured, hexagonal-shaped objects, ideas can be gathered on a magnetic white board and then grouped and rearranged by members of the group. The white board becomes a central focus for group thinking. With skilled facilitation, the key issues are quickly identified and lead to a keener appreciation of the topic. The following example will show how to use hexagons in teaching.

A Typical Session Using Hexagons

Step 1: Generating ideas (10-15 minutes)

A facilitator divides a group of divides 16 students into groups of four. Each group appoints one of their members to act as "hexagon writer" and is given a 60 x 83 cm white board with some thirty 8 cm hexagons. The "hexagon writer" writes the topic or question under discussion at the top of the white board and asks the group to generate their ideas, to summarise these into a few key words, and to call them out. The hexagon writer records the suggestions on separate hexagons. These hexagons are then placed on the white board in random fashion. Figure 1 shows an examples of a white board at this early stage. A great deal of discussion takes place in the group as individuals clarify their thoughts in response to questions and challenges. In this way thoughts and ideas become more focused and specific, while all can see the ideas displayed on the board.

Requests for reprints should be sent to A. Donaldson, Flat 3/L, 25 Kelvinside Terrace South, Glasgow G20 6DW, United Kingdom.



WHY DO YOU EAT WHAT YOU EAT?

Figure 1. Hegaxons with suggestions from individual students

Step 2: Clustering ideas (15-20 minutes)
When all four groups have generated around 25 hexagons, the facilitator asks them to look for connections between the various ideas on their board. The groups are asked to place together those ideas which seem to fit together naturally. Figure 2 shows how hexagons lend themselves ideally to this process. The group can discuss their opinions of the fit. The clusters are fluid and flexible. The facilitator encourages the students to experiment by moving hexagons around and to make connections which might not be so easy with other tools, such as flip charts or blackboards. New ideas can still be added at any stage.

This technique stimulates the students to explore new areas of thought and to generate new ideas. It also encourages debate in the group. As members explain the associations they have made, the group accepts or rejects the suggestions. Clusters are formed and reformed until everyone is happy. In this way the group is assisted towards a consensus about the fit which everyone can accept.

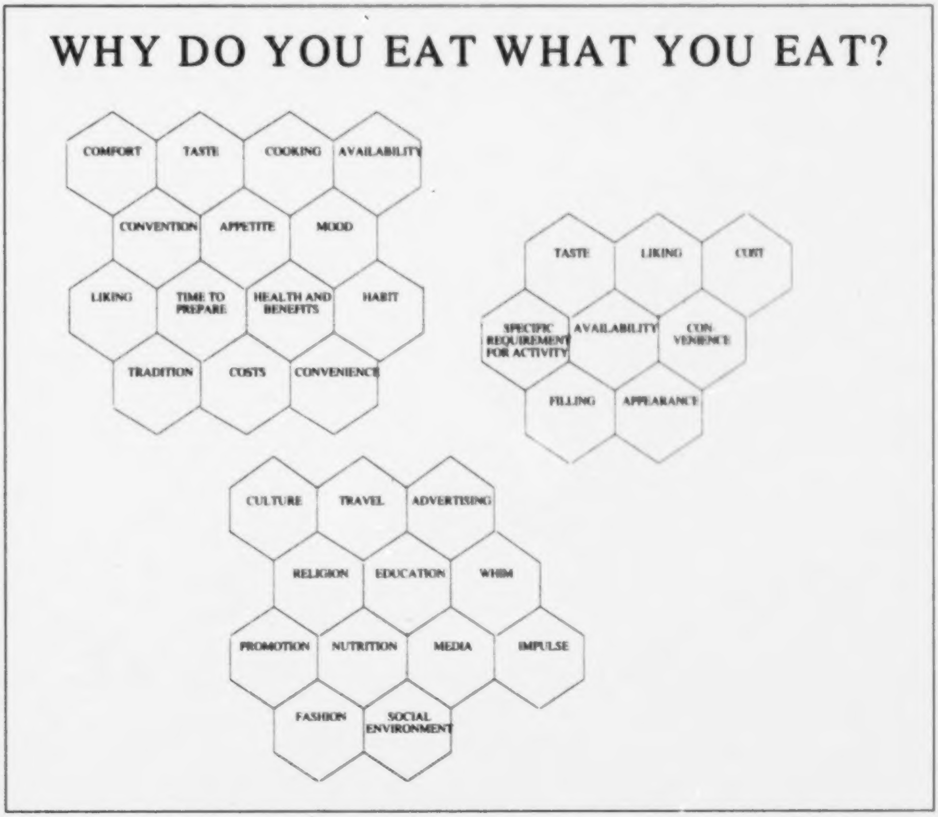

WHY DO YOU EAT WHAT YOU EAT?
COMFORT
TASTE
COOKING
AVAILABILITY
CONVENTION
APPETITE
MOOD
LIKING
TIME TO PREPARE
HEALTH AND BENEFITS
HABIT
TRADITION
COSTS
CONVENIENCE
TASTE
LIKING
COST
SPECIFIC REQUIREMENT FOR ACTIVITY
AVAILABILITY
CON-VENIENCE
FILLING
APPEARANCE
CULTURE
TRAVEL
ADVERTISING
RELIGION
EDUCATION
WHIM
PROMOTION
NUTRITION
MEDIA
IMPULSE
FASHION
SOCIAL ENVIRONMENT

Figure 2. Individual contributions now arranged in clusters by the group of students

The facilitator will prevent the groups from creating one big cluster where everything is connected to everything else. The size of clusters will vary, and some hexagons will defy connection with any others. These should be left alone, and some connections may emerge later. As the groups begin to agree on these natural groupings, they can seek out the common factor that links their ideas. The process of distilling or summarizing ideas is developed further as the groups are asked to generate a name which accurately conveys the essential meaning of the contents of each cluster. A great deal of discussion and quiet thinking goes on simultaneously at this stage. When a heading emerges, a bubble is drawn around the cluster (Fig. 3). This can be the most time-consuming stage of the process as the group strives to reach conclusions and consensus. The final clusters are recorded on paper just as they appeared on the white board.

BEST COPY AVAILABLE

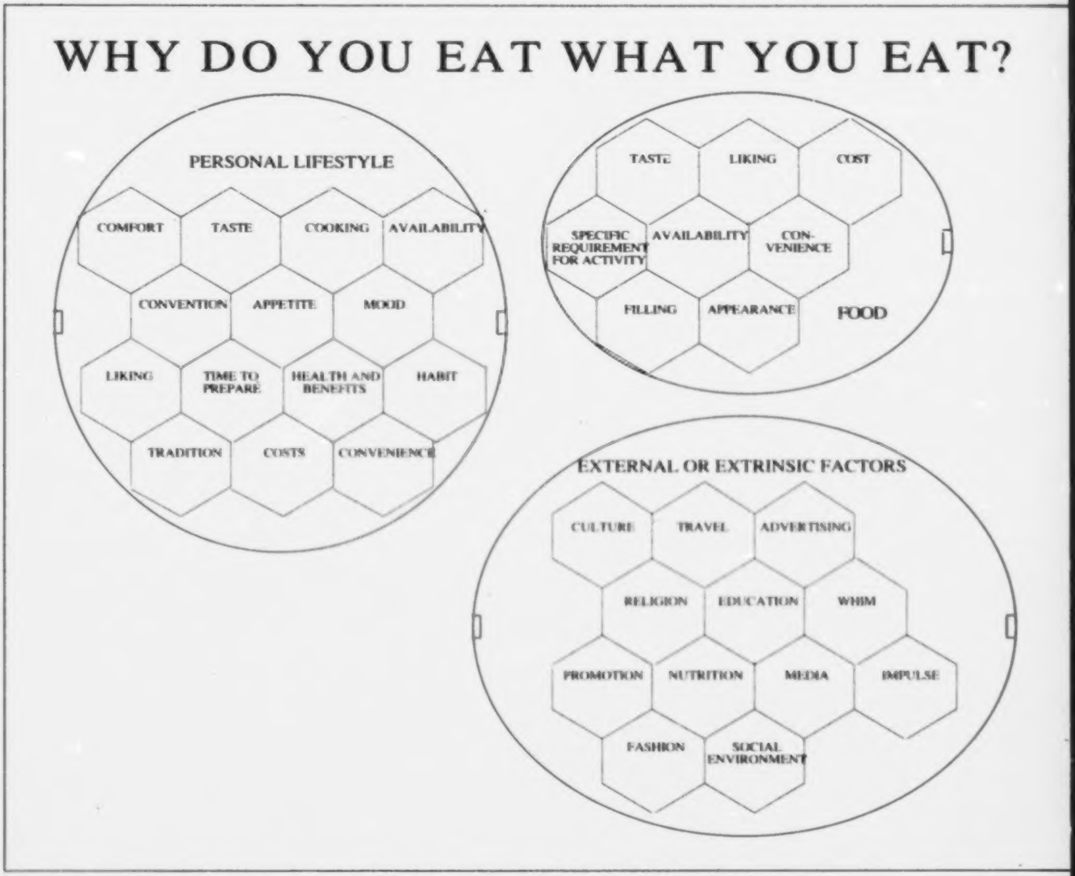

WHY DO YOU EAT WHAT YOU EAT?
PERSONAL LIFESTYLE
COMFORT
TASTE
COOKING
AVAILABILITY
CONVENTION
APPETITE
MOOD
LIKING
TIME TO PREPARE
HEALTH AND BENEFITS
HABIT
TRADITION
COSTS
CONVENIENCE
TASTE
LIKING
COST
SPECIFIC REQUIREMENT FOR ACTIVITY
AVAILABILITY
CON-VENIENCE
FILLING
APPEARANCE
FOOD
EXTERNAL OR EXTRINSIC FACTORS
CULTURE
TRAVEL
ADVERTISING
RELIGION
EDUCATION
WHIM
PROMOTION
NUTRITION
MEDIA
IMPULSE
FASHION
SOCIAL ENVIRONMENT

Figure 3. The group has given each cluster a unifying title

Step 3: Interpretation and conclusions (5-10 minutes)

The picture which emerges from the configuration of the hexagons as a result of group thinking and discussion highlights key decision areas, critical issues or concepts. The connections between each cluster can then be illustrated by means of arrows, so that the relationship of each cluster to the whole can be seen more easily. The students' own individual understanding of the topic has now been enriched by the group's understanding which has emerged graphically with the hexagons on the white board. Interpretation of the final model will depend on the students' learning task. The facilitator can now help them to draw conclusions from what the model tells them about their topic.

An Example: Teaching Food Choice and Policy Making

The Department of Human Nutrition at Glasgow University uses the hexagons to teach Food Choice and Policy Making to five classes each of 40 Fourth Year medical students. The lecturer acts as a facilitator and sub-divides each class into four groups of ten students.

Each group is issued with a white board and hexagons and appoints its own hexagon writer.

Aims of the Hexagon session

The session aims to link the students' own food preferences and experience to published research findings on the factors which influence dietary choice. As a result of the session students should see more clearly the implications for food policy makers who are charged with influencing positively the public's dietary choices.

At the beginning of the session it is suggested to the students that any meaningful discussion of how to form food policies might begin with a consideration by the students themselves of what would make them change their own diet.

The students build a shared model of their own experience in the area of food choice. Understanding their own experience creates a better awareness of the problems they might face as future health professionals on how best to influence patients' dietary choices and design food policies which really work. The session helps them to consider real people in real situations, instead of considering policy matters in the abstract.

Running the session

The students consider three questions in turn and are given 10 minutes to consider each question. 5-10 minutes are allocated for plenary discussion.

The first question is: **why do you eat what you eat?** Students quickly brainstorm then cluster their ideas. Figure 3 illustrates the clusters generated from this question. The groups then come together, display their boards to the other groups and discuss their findings. Everyone in each group is then asked to record their group's model on paper, and wipe the hexagons and the board clean ready for the next step.

The groups re-convene to consider the second question: **what factors would make you change your diet?** The facilitator suggests to the groups that the discussion on food policies might usefully begin with a consideration of what would make them change their diet. They are asked to consider the question and answer it honestly. The groups will then come together again to compare and discuss their models.

The facilitator asks the group to consider drawing some conclusions from their understanding about what would make them change their diet and how other people could be encouraged to change their diets. The students are asked to see how they might link their own motivation to change to their needs as outlined in the model created from Question 1. Figure 4 shows the clusters generated in response to Question 2.

The main conclusions are that disease or death of a close family member is often the only factor that would give them sufficient motivation to make major changes in their diet. The effects of diet on appearance or weight are other strong influences. The students begin to realise that changes in the external environment (pricing, advertising and availability) may be more important in effecting dietary change in a population than simple education. Everything is recorded on paper and the boards are wiped as before.

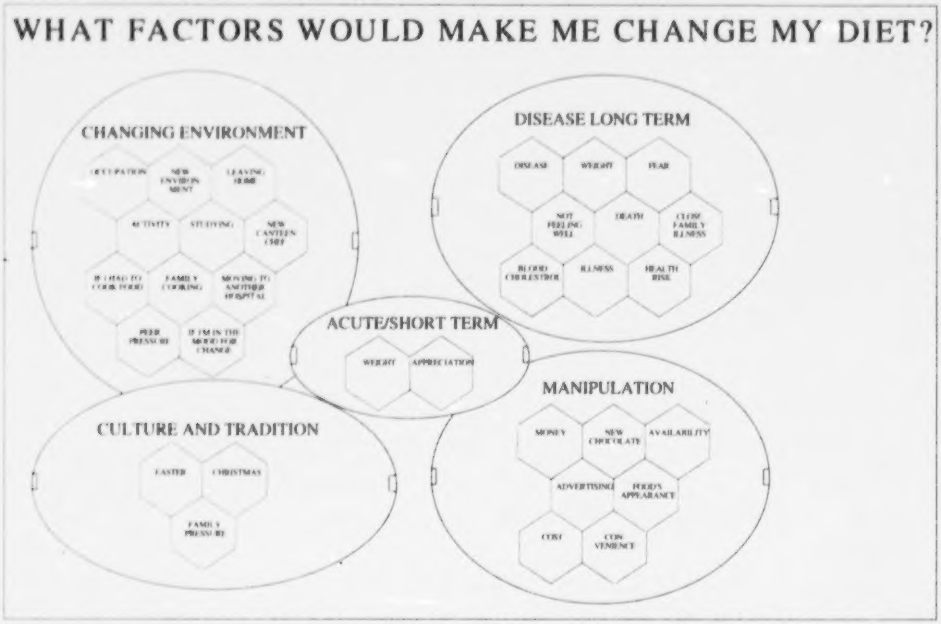

WHAT FACTORS WOULD MAKE ME CHANGE MY DIET?
CHANGING ENVIRONMENT
OCCUPATION
NEW ENVIRONMENT
LEAVING HOME
ACTIVITY
STUDYING
NEW CANTEEN CHEF
IF I HAD TO COOK FOOD
FAMILY COOKING
MOVING TO ANOTHER HOSPITAL
PEER PRESSURE
IF I'M IN THE MOOD FOR CHANGE
DISEASE LONG TERM
DISEASE
WEIGHT
FEAR
NOT FEELING WELL
DEATH
CLOSE FAMILY ILLNESS
BLOOD CHOLESTROL
ILLNESS
HEALTH RISK
ACUTE/SHORT TERM
WEIGHT
APPRECIATION
CULTURE AND TRADITION
EASTER
CHRISTMAS
FAMILY PRESSURE
MANIPULATION
MONEY
NEW CHOCOLATE
AVAILABILITY
ADVERTISING
FOOD'S APPEARANCE
COST
CON VENIENCE

Figure 4. The clusters assembled by one group in response to the second question

The facilitator then leads the groups to think about the last question: **what policies would you instigate to improve the diet of the population?** The students are asked to imagine that they are the Minister of Health with a remit to improve the diet of the nation on a generous but finite budget. They are encouraged to base their policies on the conclusions of the two previous stages which were drawn from their personal experience. The facilitator also encourages them to include roles for education, industry and shopkeepers. The clusters (Fig. 5) created by the students vary considerably from one group to another. However, most groups include some form of legislation, education with emphasis on practical skills and positive images, curbs on production/promotion of 'unhealthy' products, and subsidies on fruit and vegetables. The students are often humorous in their suggestions at this stage, for example suggesting a tax on chocolate.

As this question is being tackled, students begin to realise the role of agricultural policy and retailing in the dietary choices people make. This is something that was not obvious to the students at the beginning. The main conclusions that the students draw from the session are that designing a food policy that would work is very difficult but that it must take into account individual needs and values and not be patronising.

At the end of the session students are presented with handouts that summarize some of the answers generated by research on food preferences. These match their own clusters very well but enable any gaps to be filled in. This can make the exercise more meaningful. They also retain personal copies of their own groups' hexagon clusters for each of the three questions.

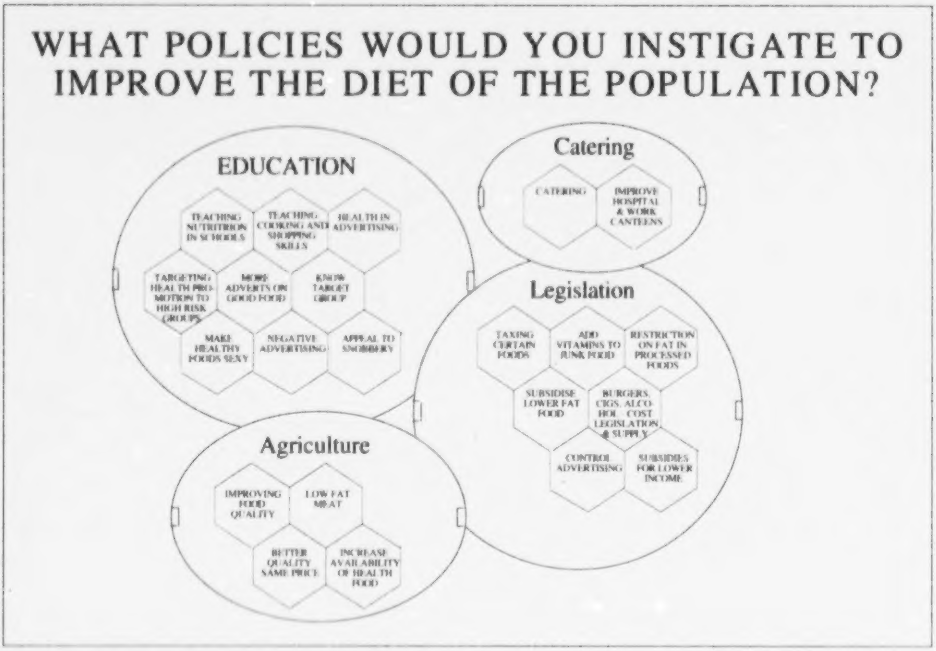

WHAT POLICIES WOULD YOU INSTIGATE TO IMPROVE THE DIET OF THE POPULATION?
EDUCATION
TEACHING NUTRITRION IN SCHOOLS
TEACHING COOKING AND SHOPPING SKILLS
HEALTH IN ADVERTISING
TARGETING HEALTH PRO-MOTION TO HIGH RISK GROUPS
MORE ADVERTS ON GOOD FOOD
KNOW TARGET GROUP
MAKE HEALTHY FOODS SEXY
NEGATIVE ADVERTISING
APPEAL TO SNOBBERY
Catering
CATERING
IMPROVE HOSPITAL & WORK CANTEENS
Legislation
TAXING CERTAIN FOODS
ADD VITAMINS TO JUNK FOOD
RESTRICTION ON FAT IN PROCESSED FOODS
SUBSIDISE LOWER FAT FOOD
BURGERS, CIGS, ALCO-HOL COST LEGISLATION & SUPPLY
CONTROL ADVERTISING
SUBSIDIES FOR LOWER INCOME
Agriculture
IMPROVING FOOD QUALITY
LOW FAT MEAT
BETTER QUALITY SAME PRICE
INCREASE AVAILABILITY OF HEALTH FOOD

Figure 5. The clusters assembled by one group in response to the third question

Feedback on the Session

Students reactions to Hexagons

The hexagons are a novelty to most students. This can be a benefit or a problem depending on the individual student. Most students are stimulated by the new medium and catch on very quickly. There is always a small number of students who either resent the 'gimmick' or take too long to understand what is wanted of them. This is more of a problem in larger groups, where more facilitators are needed to overcome the resistance. On the whole the students find the session very enjoyable and useful. The same session has been run with other students without the hexagons, and, although successful, the level of discussion and group interaction was reduced, and the time to reach conclusions increased. The impact on the students was also not as great.

BEST COPY AVAILABLE

Facilitator's reaction to Hexagons

Although the students appear to be doing most of the talking and thinking in this hexagon session, the facilitator is kept busy explaining how to use the hexagons, as well as prompting students to answer the questions and to form clusters. It is essential that the facilitator to student ratio is adequate and that there is sufficient time within the session for the facilitator to discuss the clusters with each group and with the class as a whole. This can be achieved by displaying all the boards and having the entire class compare their own with the others. Students appear more ready to put their points strongly and to argue their case. Running the session is exhausting but can be fun. The atmosphere for learning in this way becomes active, highly participative, empowering and enjoyable.

Bibliography

Donaldson, A. (1993). Thinking with hexagons: A strategy for supporting departmental improvement of teaching quality. In: P.T. Knight (Ed.) *The audit and assessment of teaching quality*. Birmingham, United Kingdom: Standing Conference on Educational Development.

Hodgson, A.M. (1992). Hexagons for systems thinking. *European Journal of Operational Research, 59, (1)*, 220-230.

IDON Ltd. (1992). *Thinking with Hexagons: A user manual.* Pitlochry, United Kingdom.

Annals of Community-Oriented Education
1994, Vol. 7, 363-370

Health Learning Materials Network of the World Health Organization

R. Ritson and M. Dowling
World Health Organization
Geneva, Switzerland

Abstract

The paper describes the Interregional Health Learning Materials (HLM) Programme of WHO, one of its programmes of technical assistance to the health sector in developing countries. The Programme was set up to assist ministries of health and education, as well as health science training institutes to develop the capacity to design and produce their own, locally adapted teaching and learning materials for health staff and the community. A secondary aim of the Programme was to promote technical cooperation between the developing countries to share materials, ideas and expertise.

As a result five intercountry networks of national HLM projects have been established in the field of health manpower development and health learning material production. An active programme of exchange operates among the countries in these networks, which are based on geographic proximity or on a common language of communication. The Programme and the intercountry activities are coordinated by a central clearinghouse at WHO headquarters in Geneva with support from the WHO Regional Offices and a number of intercountry network offices located in the developing countries.

The ultimate aim of the Programme is to de-centralise, to phase out the central clearinghouse activity in Geneva, and to hand over the responsibility for the operation of the networks of cooperation to the national staff of the country HLM projects. The emphasis is on national capacity-building and the strengthening of local staff to promote national self-sufficiency.

Introduction

One of the most serious obstacles to the delivery of primary health care in developing countries is the shortage of trained health manpower. There is an overwhelming need for basic training and continuing education for all categories of health managers. This means high qualify teaching and learning materials that are specifically designed to meet the particular needs of the target audience. Unfortunately, locally adapted training materials of this kind rarely exist in most developing countries.

Requests for reprints should be sent to R. Ritson, Division of Development of Human Resources for Health, World Health Organization, 1211 Geneva 27, Switzerland.

The WHO Health Leaning Materials Programme

To tackle the problem in a practical way, the World Health Organization (WHO) set up in Geneva the Interregional Health Learning Materials (HLM) Programme in 1981 as a joint venture with the United Nations Development Programme (UNDP). The HLM Programme has two main aims:

- to help developing countries to build up their national capacity to produce teaching and learning materials on health to suit their own local needs;
- to encourage institutions to work together between countries and to pool their resources, both human and material.

This second aim has been implemented largely through the intercountry networking activities of the HLM projects which are members of WHO's HLM Programme.

A Network

Intercountry networking or resource-sharing with national institutions in other developing countries has proved to be an effective way of strengthening a national institute. National HLM projects, collaborating with the WHO HLM Programme, are generally based in a Ministry of Health or Ministry of Education Training or Human Resource Department. Some are focused on a health science training school for middle or lower level health staff. Each national institution which joins the Programme seeks to build up the skills of its staff, invest in further training for key staff and gradually acquire the resources and facilities to design and produce its own local teaching and learning materials.

This is where membership of a WHO HLM network can help. An HLM network consists of a number of country HLM projects sharing a common language and similar health problems. They form a pool of resources of all kinds, both human and material, on which individual countries can draw. Countries can share training services, equipment and facilities, as well as skills in specialist fields. Networking is a cost-effective way of assisting a national institution, as the benefits are spread within the country and shared with other countries in the network.

Each institution has some contribution it can make to the network, such as expertise in distance education, in educational methodology, or in audio-visual aids. Conversely, each country HLM project has much to gain from its association with the network, not least an exchange of materials and experience in human resources development.

The National HLM Centre

The average HLM centre is part of the Ministry of Health or Education infrastructure, situated in a training school, a health education department or a health sciences institute. Staffing depends on the functions of the centre, and whether it has its own printing or other specialist facilities. The manager is always a health professional, assisted by one or more editors, designers, word processors, documentalists, administrators and support staff (drivers, cleaners). Where facilities exist, there will also be photographic, audio-visual and video technicians, and printing staff. The more advanced centres employ between fifteen and thirty staff, while young projects in the early phase of development may only have five or six, including the manager.

Funding of national HLM centres is gained through a series of development phases;
- a national survey, frequently financed by WHO, reveals the existence of resources, both human and physical, for the design, testing and production of HLM in the country. Such resources may be governmental, in UN agencies and Non-Governmental Organisations (NGOs) and in the commercial sector. The survey also shows what materials have been developed in the health sector, what their quality and usability is in relation to the target users, and how they correspond to priority needs for HLM in the country. The outcome of the survey is a national plan for an HLM centre which, with the help of WHO, is submitted to UNDP and other donors at country level in the form of an official proposal. The preconditions are national commitment to support the centre and to provide initial premises, staffing, and running costs. The process has resulted in modest grants, varying from $50,000 to $200,000, which have enabled the centre to begin to operate.

The second phase, is the creation of a national capacity to produce high quality educational products. This may take anything from two to six years, depending on the starting level and on the competence and ingenuity of the local manager and key staff. It also demands a great deal of training in all the skills needed for HLM development. WHO and the intercountry networks have played a major role in this process. The centre then promotes itself through brochures and personal contacts, and prepares itself to accept contracts and meet deadlines - never an easy task for a governmental institution.

The final phase is the advance from dependence on external funds to self-reliance. A revolving fund is established: tasks for the Ministry and other government departments are carried out on a payment-for-service basis; contracts to develop health sector educational materials are also accepted from UN agencies and NGOs. Together, these form the foundation for the centre to finance its own activities and operating costs. This institution building is the primary objective of an HLM project. A number of countries have already completed the sequence successfully.

The Networks

Figure 1 illustrates the structure and organisation of the five HLM networks and the member countries belonging to each. The oldest-established and most experienced is the English-speaking network in Africa which operates from Nairobi, Kenya and coordinates the intercountry programme of activities of eight countries. The francophone network, based in Cotonou, Benin at the Faculty of Health Sciences of the University of Cotonou coordinates intercountry workshops, meetings and exchanges between ten French-speaking African countries. This network has developed a diversity of resources and expertise, reflecting the very different national skills and situations in its member countries. The francophone network countries are geographically dispersed over the African continent, from Morocco and Tunisia on the North African/Mediterranean coast to landlocked Burundi, Chad, Rwanda and Zaire, as far as the island of Mauritius, where both English and French are widely spoken.

The Arabic-speaking group of countries in Africa and the WHO Eastern Mediterranean Region form their own intercountry network, which is managed by a clearinghouse or network office in the WHO Regional Office in Alexandria, Egypt. This group produces locally adapted materials in Arabic, specifically designed to reflect the local culture, and it collaborates in an intercountry programme of training and resource-sharing of its member countries.

Anglophone network in Africa
Ethiopia, Ghana, Kenya, Sudan, Tanzania, Uganda, Zambia, Zimbabwe.
Coordinated by the network office in Nairobi, Kenya.

Francophone network in Africa
Algeria, Benin, Burundi, Chad, Djibouti, Mauritius, Morocco, Rwanda, Tunisia, Zaire.
Coordinated by the network office in Cotonou, Benin.

Lusophone network in Africa
Angola, Cabo Verde, Guinea Bissau, Mozambique, Sao Tome & Principe.
Coordinated by the network office in Bissau, Guinea Bissau.

South East Asia network
Bangladesh, Bhutan, Indonesia, Mongolia, Myanmar, Nepal, Sri Lanka, Thailand.
Coordinated by the WHO Regional Office for South East Asia in New Delhi, India.

Arabophone network
Afghanistan, Algeria, Bahrain, Cyprus, Djibouti, Egypt, Iran, Iraq, Jordan, Lebanon, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, Yemen.
Coordinated by the WHO Regional Office for the Eastern Mediterranean in Alexandria, Egypt.

Associated member countries
Colombia, Fiji, Guyana, Philippines, Uruguay.
Coordinated by the central clearinghouse at WHO, Geneva, Switzerland.

Figure 1. Countries which participate in the five networks and associated member countries

The lusophone (Portuguese language) countries in Africa are still in the preparatory stages of production of local teaching and learning materials on health. They are amongst the poorest in Africa and most lacking in local resources. Both Mozambique and Guinea Bissau have participated in several HLM network workshops and meetings in Africa, but it has been much more difficulty to promote a real interchange of materials and experiences between the lusophone group of countries.

The HLM network in the WHO South East Asia Region involves all the eight countries of the Region and it is particularly active. Its common language of communication is English, although this is not the local language, nor even an official language, in several member countries. Network activities, such as training or study visits, are conducted in English, and model materials for local adaptation are also distributed in this language. The intercountry networking is managed by the WHO South East Asia Regional Office in Delhi, India.

Each of the networks operates an intercountry newsletter or journal which keeps HLM staff in touch with colleagues and publicises news of forthcoming meetings, courses and about specialist publications. The networks organise programmes of staff exchanges and share consultant services and each other's expertise. Prominent are training workshops on areas of common concern, such as writing, editing, micro computing skills, as well as design and layout of educational materials. Other collaborative ventures include joint research projects on the application of training materials field testing and the management of national projects.

Output of the HLM Programme

The WHO central clearinghouse in Geneva prepares and issues manuals on different key skills required by national centres. Examples are formulation of proposals and fund-raising, conduct of needs and resource surveys, design and layout of HLM, techniques of networking, project management, field testing and evaluation. These are produced in response to requests from centre managers, and are backed up by regular information and promotion materials (brochures, newsletters, fact sheets). In addition, the network offices prepare and distribute their own catalogues of HLM produced by participating countries.

At country level the output is very variable, both in quality and quantity. Centres like those in Benin, Ethiopia and Nepal are producing a great deal of excellent material in the form of textbooks, manuals, brochures, posters, slide sets, and video for use by teachers, students, field staff and the general public. Other centres have a more modest output, often with emphasis on a particular product. Thus Tanzania and Zambia both distribute regular information newsletters to all health staff in their countries. Guyana, with very limited resources, has been meeting the promotional HLM needs of rural populations. Rwanda has concentrated its efforts on teacher training, and Sudan focuses on the development and publication of curricula and training programmes for health staff. The majority of materials produced in the six centres in south-east Asia are in local languages (e.g. Bahasa-

Indonesia, Nepali, Thai) and are not transferable between the countries.

National Infrastructure Building
Project planning
Needs assessment
Priority setting
Premises/equipment
Funding
Monitoring/evaluation
Sustainability

Human Resource Development
Curriculum revision
Continuing education
Distance education
Identification of appropriate
- training
- study tours
- on-the-job training

Project management
Research and development

Technical Cooperation
Intercountry networks
Training workshops
Exchange of expertise
Resource centres
Information database
Liaison with agencies/NGOs
Integration with UN system

Communication Technology
Educational methodology
Educational technology
- micro computing
- diskette exchange
- compact disks

Communication mechanisms
- electronic transfer
- satellite transmission

Promotion and Fund-raising
Promotional brochures
Newsletters
Project formulation and proposal writing
Liaison with donors
Programme progress reports
Planning/budgeting
Coordination

Community Involvement
Health promotion
Community-based health care
Participatory hygiene education
Graphic media for developing
- women and health
- child survival
- school education
- post-literacy materials

Health messages through commercial media

Figure 2. WHO/UNDP Health Learning Materials programme, coordinated by the HLM clearinghouse at WHO Geneva

Role of the Central Clearinghouse on HLM at WHO Geneva

The central clearinghouse at WHO, Geneva coordinates the programme of technical assistance and intercountry cooperation within the HLM networks. An overview of the programme of technical assistance is given in Figure 2, which shows the six main areas of assistance. These are national infrastructure building, one of the two main aims of the Programme. This involves human resource development, the promotion of educational and communication technology, and health education in the community. It also involves assistance with project management and fund-raising. The promotion of technical cooperation with other developing countries, or networking is the second main aim of the Programme. All these activities are implemented in each of the five intercountry networks which collaborate with the WHO HLM Programme through coordination by the central clearinghouse at WHO headquarters in Geneva.

These main components of the technical assistance programme form an integrated whole, with each part complementing the rest. In fact, the resources which are invested in national infrastructure building, such as staff training, management and planning, equipment and material resources, also serve to strengthen the network as a whole, as they are shared with other country institutes. Thus the two main aims of the WHO HLM Programme, national capacity building and intercountry technical cooperation, are mutually supportive and self-sustaining. In the vast majority of cases, all the skills and resources needed to build up a health training institute in a developing country can be identified within the network of which it is a member, and can be tapped at very much lower cost than by bringing them in from elsewhere.

As a result of investment, during the past ten years, in training staff in key HLM development skills, there is now a significant pool of trained health manpower in each network on which newer members can draw. Figure 3 gives details of the assistance given by the Programme to country HLM projects, as well as transfer of information and expertise to developing countries. It shows the technical cooperation provided by the Programme in planning and managing the training of health staff and health development projects. It also illustrates the efforts made by the central clearinghouse to promote the needs of developing countries for assistance with human resource development and to identify international support.

Conclusion

Above all, the ultimate goal of the WHO HLM Programme is to assist developing countries to achieve self-reliance or self-sufficiency. They need to break the cycle of dependence on external aid which can be self-perpetrating. The emphasis throughout the HLM Programme of technical assistance is on teaching staff in developing countries to "do it yourself", where all activities are designed with built-in sustainability. The HLM networks have proved to be a practical and successful model of development assistance to the health sector. They have shown themselves to be a very effective mechanism for the promotion of technical cooperation.

Training

1. selecting and distributing model materials for adaptation to local needs
2. providing guidelines on key areas of HLM development, e.g. information design, micro computing
3. sharing information and training materials amongst country projects and with other HLM networks
4. identifying appropriate consultants and training courses to meet country requests for assistance
5. organising intercountry training workshops and strategy and planning meetings for HLM specialists

Planning and Management

6. assisting in planning new national HLM projects, including needs and resource surveys, national project strategy and donor support
7. providing guidelines for project managers, e.g. printshop management, cost recovery mechanisms, fund-raising
8. establishing and supporting intercountry network offices
9. assisting WHO Regional Offices to plan and establish Regional HLM clearinghouses

Funding and Promotion

10. promoting the Programme and its network of country projects to governments, NGOs, UN agencies, collaborating information materials, issuing an updated computer-based catalogue of HLM and a regular newsletter
11. preparing fund-raising proposals to donors for grants to country HLM projects, intercountry network and central clearinghouse activities
12. providing seed money to establish new national projects, e.g. to conduct needs and resource surveys, HLM production equipment, and basic training for key HLM staff
13. providing funds for ongoing country and intercountry HLM activities, e.g. training, field testing, research
14. promoting, organising and financing intercountry study visits and exchanges of key staff, expertise and materials
15. funding and arranging visits of technical staff and consultants from the central clearinghouse to country institutions and intercountry workshops and meetings

Figure 3. Activities of the central clearinghouse, Geneva

Annals of Community-Oriented Education
1994, Vol. 7, 371-374

ASSESSMENT

Evaluation of Teachers - By Whom?

T. Singh, M.V. Natu, A. Zachariah and P. Zachariah
Christian Medical College
Ludhiana, India

Abstract

The opinion of the entire teaching staff of the pre- and para-clinical departments at the Christian Medical College, Ludhiana, India was sought on possible sources of feedback on teaching skills. The majority (87.8%) of the teachers (29) favoured feedback while 4 (12.2%) did not favour such a process. Those who wanted feedback preferred students and junior staff as the sources of feedback.

The paper discusses the significance of the findings and possible implications for improving the quality of medical education.

Introduction

The systems - approach to education (Sharma, 1988) emphasizes "feedback" as a means of improving the quality of teaching. Feedback aims to improve the "output" by varying the "input" or the "process". Medical education is no exception. The literature is replete with studies on the importance of "feedback" for improving the quality of medical education (Costin et al., 1971; Feinstein and Levine, 1971; Singh et al., 1991).

It stands to reason that students, as consumers, are in the best position to comment on the quality of teaching - although some, for various reasons, do not accept this proposition (Naftulin et al., 1973).

To provide a solution to this enigma we elicited the opinion of medical teachers on whether they would like to have feedback on their teaching skills and, if yes, who should provide that feedback. The present communication reports the results of this survey of their opinion.

Material and Methods

The survey was designed to cover the entire teaching staff of the pre- and para-clinical departments, that is Anatomy, Physiology, Biochemistry, Pathology, Pharmacology and Microbiology. The purpose of the exercise was explained by the Principal during an informal meeting.

In a two part questionnaire the first part sought opinion on whether the teachers would like to have any feedback on their teaching skills and if yes, by whom - their seniors, colleagues,

Requests for reprints should be sent to M.V. Natu, Christian Medical College, Department of Pharmacology, Ludhiana (Punjab) - 141 008, India.

juniors or students. Part Two contained ten short affirmative statements regarding common perceptions about pros and cons of student feedback. These were adopted from an earlier publication (Katz, 1985). The questionnaire was validated by administering it to a group of ten clinical teachers. This helped to modify any ambiguous statement, as well as provide data to calculate the reliability of the scale by the split half method (Best and Kahn, 1992). The questionnaire had a reliability of 0.63 which was significant at 8 degrees of freedom ($P<0.01$).

The questionnaire was administered at a subsequent informal meeting which was attended by all the members of these departments. They were also requested to amplify any statement or to add any additional point which they thought important in relation to feedback.

Results

The response to the statement "who should provide the feedback", is shown in Table I. It will be noted that a majority of the teachers were in favour of receiving feedback either from their junior colleagues or from the students.
Positive responses to statements given in the second part are shown in Table II.

Table I. Responses to Part One of the questionnaire: Who shouldprovide feedback?

Preferred sources of feedback	**No.**	**(N=33)**
Seniors	6	(18.1%)
Colleagues	4	(12.1%)
Juniors	20	(60.6%)
Students	20	(60.6%)
None	4	(12.1%)

Multiple responses were possible

Discussion

There is no ambiguity that feedback is an important instrument for improving the quality of any product or process. Its importance in improving quality of medical education has been demonstrated by our own study (Singh et al., 1991). However, opinions differ about the source of feedback. The present study was an attempt to provide an answer.
It is clear from the responses that most teachers want to have feedback about the quality of their teaching, and their preferred source is either students or junior colleagues.

Table II. Positive responses to statements in Part Two of the questionnaire

	Statements	No. (N=33)
1.	Students are too immature to provide value judgements	6 (18.1%)
2.	Students usually get influenced by the personality of the teacher	19 (57.5%)
3.	A sincere, hard task master may be unpopular	14 (42.4%)
4.	Students may fear reprisals and refrain from making adverse comments	18 (54.5%)
5.	As consumers, students are in a very good position to judge teachers	27 (81.8%)
6.	Feedback from students can help improve teaching skills	31 (93.9%)
7.	It is likely to be misused for humiliating junior teachers	14 (42.4%)
8.	Searching for better examination results, students may indulge in insincere adulation	21 (63.6%)
9.	Teachers may attempt to please students by non-academic favours	12 (36.3%)
10.	Students may gain unnecessary power	9 (27.2%)

The responses to Part Two of the questionnaire indicate that medical teachers consider their students to be mature enough to pass judgements on the quality of teaching. However, on two aspects the responses do not follow the general trend: "Students may fear reprisals and refrain from making adverse comments" and "They may indulge in insincere adulation to secure better examination results". Superficially, both these aspects may appear true, but, if teachers can ensure strict confidentiality, it should be possible to overcome these limitations. Based on these observations, we strongly recommend students as the source of feedback.

However, it would also be worthwhile to take a look at the other side of the coin. Like any other performance appraisal, student feedback is also subject to certain errors, specially the "halo effect" (Robbins, 1986) where one or two qualities or shortcomings of a techer may tend to influence the entire rating. In addition the qualitites, on which feedback is sought, are not strictly measurable and are subject to personal bias. Again, the students may start comparing one teacher with another, which is not the purpose of this exercise. Lastly, students may be impressed more by the style of teaching rather than its accuracy or content. To conclude, teachers should be encouraged to obtain feedback from their students on the quality of their teaching. If the above limitations are kept in mind, such feedback can become a very useful tool for improving the effectiveness of the teacher.

References

Best, J.W., & Kahn, J.V. (1992). *Research in education.* New Delhi, India: Prentice Hall

Costin, F., Greenough, W.T., & Menges, R.V. (1971) Student ratings of college teaching: Reliability, validity and usefulness. *Reviews of Educational Research,* 511-535.

Feinstein, E., & Levine, H.G. (1980). Impact of student ratings on the basic science portion of the medical curriculum. *Journal of Medical Education, 55,* 502-512.

Katz, F.M. (1985). *Evaluating educational programmes for health personnel.* No. 49. Offset Publication Geneva, Switzerland: World Health Organization.

Naftulin, D.H., Ware, J.E., & Donnelly, F.A. (1973). A paradigm of educational seduction. *Journal of Medical Education, 48,* 630-635.

Robbins, S.P. Performance appraisal (1986). In: *Organisational behaviour.* 3rd ed. New Delhi,India: Prentice Hall.

Sharma, M.L. (1988). *Systems approach to education.* Jaipur, India: National Publishers.

Singh, T., Singh, D., Natu, M.V., & Zachariah, A. (1991). Hawthorne effect: A tool improving the quality of medical education. *Indian Journal of Medical Education, 30,* 33-37.

Annals of Community-Oriented Education
1994, Vol. 7, 375-382

The PBQ - Problem-Based Questions in Assessment

E. Abu Bakar
Universiti Kebangsaan Malaysia
Kuala Lumpur, Malaysia.

Abstract

The pre-clinical curriculum of the Medical Faculty, Universiti Kebangsaan Malaysia, changed in 1987 from the traditional, discipline-based system to integration of the 'normal' and 'abnormal' disciplines around modular organ-systems. To enhance integration, problem-based learning (PBL) was introduced as one of the teaching-learning strategies, which was merely complementary to the traditional lectures, tutorials and practicals. Unfortunately, the mode of assessment in the first year of implementation remained purely traditional, until the Module on the Alimentary System and Nutrition (GIT) introduced PBQ (problem-based questions) in the following year. This paper describes how the PBQ, a form of the Modified Essay Question (MEQ), came to be used, and how it is constructed and marked. The advantages and disadvantages compared with traditional essays and teacher acceptability are also discussed.

Introduction

Universiti Kebangsaan Malaysia (UKM) is one of three universities in Malaysia offering medicine. Its Medical Faculty was established in 1972, based on the traditional discipline-based curriculum. Following a major curriculum review, however, the pre-clinical stage underwent radical change in 1987 by adopting horizontal integration of the basic medical sciences into modular topics and organ-systems. Although the teaching-learning strategy remained largely traditional, problem-based learning (PBL), together with other self-directed learning methods, was introduced as a complementary strategy to address the frequent laments that most students demonstrated either lack of, or inability to apply basic knowledge in their clinical years (Shahabudin et al, 1988). Unfortunately, the mode of modular assessments in the first year of implementation remained traditional, until the Module on the Alimentary System and Nutrition (GIT Module) introduced problem-based questions (PBQs) in the following year.

The Pre-Clinical Assessment System

The undergraduates undergo two major examinations, the First Professional Examination after the two preclinical years and the Final Professional Examination at the end of their clinical years. To be eligible to sit the First Professional Examination, students must pass all modular examinations during the four semesters. A viva is given for distinction and

---

Requests for reprints should be sent to E. Abu Bakar, Universiti Kebangsaan Malaysia, Faculty of Medicine, Department of Medical Education, Jalan Raja Muda, 50300 Kuala Lumpur, Malaysia.

borderline candidates. All professional and modular examination questions are vetted by departments, module groups and the Central Examination Committee.

The initial euphoria surrounding the Integrated Preclinical Curriculum soon gave way to the all-too-familiar teacher rumblings, that despite PBL and attempts at integration, students (and most teachers) were still very subject-orientated in their thinking and teaching-learning approaches. The mode of modular assessments in the first year of implementation remained complacently traditional, using conventional essays and the usual MCQs (Multiple True/False), although two "new" types of MCQs (the Matching and Reasoning-and-Assertion Questions) and an OSPE (Objective Structured Practical Examination) were incorporated. Before long, students began questioning the importance of PBL and attendance in some groups dwindled.

Why PBQ?

To understand why and how the PBQ came about, let us have a preview of what tends to happen behind closed doors through a simulation of the common scenario to discuss **essay** questions at an Examination Committee meeting.

Prof. Anna Tommy: Write an essay on the embryology of the appendix.

Educationist: Whatever for? What's the relevance?

Prof. Anna Tommy: Oh, they know this - it's in the books! If they don't, it'll teach them to fool around in my lectures!

Deputy Academic Dean: What do you expect from them?

Prof. Anna Tommy: Well...everything I gave in the lecture!

Prof. Ekolaliah: In that case, the question should read: "Regurgitate the lecture on the appendix given by Prof Anna Tommy".

The above reflects some of the issues in assessment, the major one being *relevance* of the subject matter to be tested. Not infrequently, teachers would set questions "in revenge", getting back at students for poor attendance during their lectures. When the relevance of a test item is questioned, the mere mention of its existence in the books or that the students have been taught, would silence even the most vocal of committee members. Occasionally, we come across instances when committee members, not able to answer questions from their own departments, get away with the excuse that the questions were set by other lecturers. With numerous deadlines to be met, no worn-out teacher would argue too much about questions whose relevance is rather obscure. Thus, despite integration of the curriculum and adoption of PBL, albeit in modest, small doses, the assessment system in the first year of its implementation failed to promote and evaluate PBL. However, as assessment is "the tail that wags the dog", the GIT Module decided to break away from conventional assessment formats by introducing PBQs in place of traditional essays to ensure relevance and promote PBL.

So what are PBQs?

PBQs stand for Problem-Based Questions, i.e. Questions Based on Problems. They are a form of Modified Essay Questions (MEQs) (Knox, 1975) now used in the UKM preclinical curriculum *to ensure relevance*, maximize interdisciplinary integration and promote PBL, especially among the students. PBQs consist of a gradual build-up of patient or community problems with questions between brief scenarios. PBQs can be formulated in such a way as to test higher cognitive levels, while still retaining the ability to test recall. In other words, it is versatile enough to accomodate answers of varying lengths, from one-word answers to more elaborate short answers, or essays explaining mechanisms of bodily functions and disease processes, where students can articulate their capacity for self-expression. As the questions are based on clinical or community health problems, the coverage, whether tested at a higher or merely recall level, would very unlikely be irrelevant. A sample PBQ is given in the Appendix A.

Since the PBQ is just a clone of the MEQ, some may question the need for these "modified MEQs" to be known by a different name. The answer is very simple: it is a straight forward solution to a problem of nomenclature. At UKM, many of the lecturers had never heard of MEQs. "Modified Essay Questions" would conjure up visions in their minds of traditional essays under several subheadings, minus the problems. This is quite understandable, as the keyword in MEQs is "Essay" not "Problem" as in PBQs.

The major difference, as compared to MEQs, is versatility. In the hands of creative question designers, PBQs can be made to accomodate answers of different lengths. However, we usually design them with short answers in mind. In accordance with this flexibility, the time and marks alloted to each item or question can also be varied. The marks and time alloted to each item or question are more or less proportional to the amount of content and cognitive level. Half or one mark is allocated for a one-word recall answer as the smallest unit, unlike the fixed one mark assigned to MEQs for each notional 5-minute unit that examiners are encouraged to develop (Feletti, 1988).

Unlike the MEQ, the PBQ is also used to test and promote students' **ability to summarize**. With three problems in a PBQ paper, they are usually required to summarise the longest problem. This process of summarising necessitates review of the whole problem. Therefore, unlike the practice where the Patient Management Problem (PMP) answers are collected at item intervals to prevent cueing (Shahabudin, 1993), PBQ answers are not collected at such intervals, because the skill in actually diagnosing the problem is not deemed critical the pre-clinical stage.

Advantages of the PBQs Compated with Essays

The major asset of the PBQ in the preclinical curriculum at UKM is its ability to ensure relevance in content, as compared to traditional essays. While maximising integration and promoting PBL, this paper simulation of patient and community health problems makes the questions more interesting and life-like to pre-clinical students, who, in the absence of early patient contact, need to feel that they are being trained to be doctors, not biochemists or immunologists.

Even though it is possible to test the various cognitive levels in the PBQs, from simple recall to problem analysis and synthesis, it is as yet unclear whether it is a reliable predictor of future competence in clerkship in the same way that MEQs indicate clinical competence (Cox, 1988). Validity and reliability remain to be studied.

Acceptability of PBQs

As with MEQs, the tremendous logistics involved (Cox, 1988) made the PBQs unpopular with teachers in the beginning, but over the years, the machinery is now well-oiled. The preparation is still rather tiresome as can be seen from the numerous steps in construction (Table I) but this function is confined to the few in the Examination Committee. The Dean's Office takes care of arranging meetings, putting the various questions together, printing, colour-coding, distributing to departments for marking, etc. Implementation is manpower intensive with an invigilator from each contributing department in the examination hall.

Lecturers involved in marking specific parts of the questions find the PBQ easier to mark compared to traditional half-hour essays, as the answers are usually shorter and the workload is shared. Computation of marks is assisted by the Computer Unit. The various departmental components are colour-coded, so that distribution for marking is made easy. The students have to make sure that their answer papers are stapled together by colour, when their answer papers are dropped into colour-coded boxes at the exit from the examination hall.

In relation to content coverage and depth, many teachers have expressed their disapproval of the PBQ. They perceive these questions to be "shallow, mundane, too simple and down-to-earth". They also frown upon the summarising question which they claim is a bonus and should be better used for more content coverage. Teacher displeasure over the assessment system of the integrated pre-clinical curriculum was one of the reasons for the "split" in 1991 of the pre-clinical curriculum back into the "normal" (Year 1) and "abnormal" (Year 2) components, though still "synchronised" around parallel organ-systems. This 1991 change saw the displacement of PBQs by traditional essays in the modular, semester examinations, even though PBQs are maintained for the professional examinations. There is a surreptitious comeback of many irrelevant topics that had been dropped in 1987. This regressive trend is a manifestation of the "coveritis syndrome" (Des Marchais and Dumais, 1990).

Conclusion

It can be said that PBQ is the "tail that wags the PBL dog in UKM". Its clinical scenarios ensure relevance and integration, thus promoting PBL amongst the students. Compared to traditional essays, the PBQs are more relevant as an assessment tool in an integrated pre-clinical curriculum and as an evaluation of the effectiveness of PBL. However, like MEQs, the logistics require a significant commitment from the staff, especially those directly involved in the Central Examination Committee. The continuation of this form of assessment depends on the level of corporate commitment to PBL (Abu Bakar, 1991). If it is deemed important, then the staff involved with PBL and PBQs need to see incentives for their time and effort.

Table I. Steps in the construction of PBQs

Committee

1. Select problem
2. Create general scenario

Question Designer

3. "Polish" scenario
4. Formulate questions
5. Allot:
    - time
    - marks/question
    - departmental examiners
6. Put questions together by using colour-coding for departmental identification
7. Edit language and insert graphics

Committee

8. Review to ensure:
    - problem is important and realistic
    - questions are fair and appropriate
    - time alloted is adequate
    - marks alloted for various questions are balanced

References

Abu Bakar, E. (1991). Report on PBL workshop. *Medical Education Bulletin, 8(1)*, 29-37.

Cox, K. (1988). What type of written examination should I use? In: K.R. Cox, & C.E. Ewan (Eds.)*The medical teacher* (2nd ed.). Edinburgh, United Kingdom: Churchill Livingstone.

Des Marchais, J.E., & Dumais, B. (1990). Issues in implementing a problem-based learning curriculum at the University of Sherbrooke. *Annals of Community-Oriented Education, 3, (1)*, 9-23. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Feletti, I. (1988). How to manage written tests: Short answer, modified essay and long essay questions. In: K.R. Cox, & C.E. Ewan (Eds). *The medical teacher* (2nd ed.). Edinburgh, United Kingdom: Churchill Livingstone.

Knox, J.D.E. (1975). The modified essay question. *Medical Education, 5*. Dundee, United Kingdom: Association for the Study of Medical Education.

Shahabudin, S.H., Mahmud, M.N., & Lim, K.E. (1988). Changing a conventional curriculum in an established medical school. *Medical Teacher, 10(2)*, 149-157.

Shahabudin, S.H. (1993). *What does students' performance on patient management problems reveal?* Abstract for International Symposium on Student Assessment, Penang, Malaysia.

APPENDIX

Four pages as an example

UNIVERSITI KEBANGSAAN MALAYSIA

FIRST PROFESSIONAL EXAMINATION - SESSION 1989/1990
M.D.

April 1989 Time: 2 hours 45 mins

PAPER 1
PROBLEM BASED QUESTIONS

INSTRUCTION:

1. This paper consists of 3 problems: A, B and C.
   Answer ALL questions.
2. Read these problems carefully and **write** your answers **in the spaces provided**. If the space provided is insufficient, use the flipside page of the same color.
3. Use the **time** and **marks** given as a **guide** to answer the questions.
4. When you have completed your answers:

a) Ensure that your **matric number** is written on **every page**.

b) **Unstaple** your answer papers.

c) **Restaple** answer papers of the **same color** according to the **sequence** of the problems.

d) **Place** your **answer papers** in the **boxes** provided according to the **color code**.

This papers consists of 16 pages

A

Matric. No: [Pathology Red paper]

PROBLEM A: Case of Ahmad (55 minutes; 47 marks)

Ahmad, a standard one pupil in a rural school in Kelantan, was examined by Dr Ali, a Medical Officer of the School Health Program when he visited the school. Ahmad was found to be very pale and his spleen was enlarged. According to his class teacher, Ahmad was also not active in physical education because he was easily fatigued. Dr Ali referred Ahmad to the hospital for investigations.

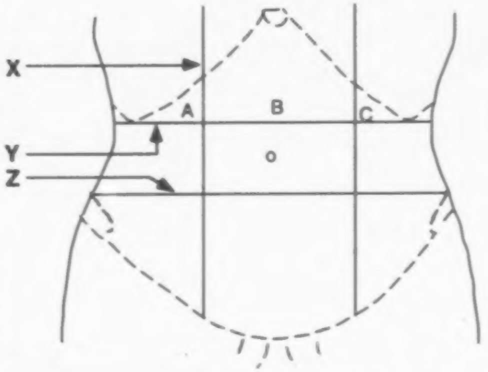
QUESTION 1 (8 minutes, 4 marks) [tests analytical skills]

State 4 diseases that are most likely to cause Ahmad's pallor and splenomegaly.
1)
2)
3)
4)

Model answer: 1. Malaria ; 2. Leukaemia ; 3. Malnutrition ; 4. Worm infestation of the gut

A
Matric. No: [Anatomy Green paper]

Study the following diagram of the surface anatomy of the abdomen:



QUESTION 2 (5minutes, 4 marks) [tests recall]

a) Label:
   - i) the areas A, B and C. (1.5 min; 1.5 marks)
   - ii) the lines X, Y and Z. (1.5 min; 1.5 marks)

b) Draw the position of the normal spleen and liver in the diagram provided. (2 min; 1 mark

A
Matric. No: [Pathology Red paper]

The follwing data was the laboratory report on Ahmad's full blood picture: (normal values are given in brackets).

Hb	= 9.2 gm %	(14 - 18 gm %)
MCV	= 68 fl	(82 - 97fl)
MCH	= 24 pg	(27 - 33pg)
MCHC	= 25 g/dL	(32 - 36g/dL)
TWBC:	= 8.6 x 10^9/L	(4.5 - 13.5 x 10^9/L)
Neutrophils	= 2.2 x 10^9/L	
Eosinophils	= 5.1 x 10^9/L	
Basophils	= 0.0 x 10^9/L	
Lymphocytes	= 0.4 x 10^9/L	
Monocytes	= 0.4 x 10^9/L	

QUESTION 3 (5 minutes, 5 marks)

a) From the data given, what type of anemia has Ahmad got?
(2 min; 2 marks)
[tests analytical/ interpretation skill]

b) State 3 conditions that may cause this type of anemia (3 min; 3 marks)
1)
2)
3)
[tests recall, provided student got Q 3a) right]

Annals of Community-Oriented Education
1994, Vol. 7, 383-388

Assessment During Rotations to District Hospitals in Rural Areas

R. L. Henry
University of Newcastle
Newcastle, Australia

Abstract

During the third year of their five year undergraduate medical course, all students from The University of Newcastle, Australia spend eight weeks in a district hospital outside Newcastle. This provides an opportunity for students to experience many aspects of rural medicine and to see a health system that is very different from the large teaching hospital with which they have been most familiar. A challenge has been to ensure that both students and the teachers in these peripheral hospitals perceive that this learning is just as important to the goals of the curriculum as learning in the major teaching centre.

We have employed country term supervisors in each of the country centres to co-ordinate and supervise student learning. Assessment is also conducted in the country centres. Towards the end of each country term, full time members of the academic staff travel (usually by plane) from Newcastle to the peripheral hospitals. Professional skills assessments are conducted by pairs of assessors, one from Newcastle and one from the country centre. In this way the Faculty demonstrates to both students and tutors the importance of the country rotations and the respect for the medical colleagues in these centres. This has the added advantage of helping to calibrate the tutors to the standards expected by the Faculty.

The second component of assessment that is judged jointly by Faculty and country tutors is a presentation by each student about a patient with a chronic disability with whom the student has had extensive contact during the rotation. This helps to highlight the importance of linking the hospital with the community.
Anecdotal evidence suggests that this is a satisfactory means of ensuring that the clinical rotation to a peripheral centre is valued by the students and is consonant with the objectives of the Faculty.

Introduction

Historically, most medical schools have conducted the clinical component of undergraduate education in large teaching hospitals. These institutions are relatively rich in human and other resources. In particular, medical, nursing and allied health staff are well trained and have considerable experience in managing patients with complicated problems. Back up laboratory and medical imaging facilities are plentiful, and students have an opportunity

Requests for reprints should be sent to R. Henry, University of Newcastle, John Hunter Hospital, Discipline of Paediatrics, Locked Bag 1, Hunter Region Mail Centre 2310 NSW, Australia.

of seeing modern technology in use. These tertiary referral hospitals are relatively large, with large numbers of patients, which makes it possible for many students to be based at the hospital.

Unfortunately it is well recognised that these hospitals do not reflect the type of medical care required for the majority of patients. Most health delivery is in the community and in smaller hospitals. In recent years an increased commitment has been made by many medical schools to deliver a significant proportion of undergraduate teaching in the community. The obvious advantages are that the health problems confronted are the common ones in medicine, and students experience health delivery that is likely to reflect their postgraduate workloads. However, the disadvantages are considerable. Many community centres and district hospitals are poorly resourced (both in staff and facilities) and may be located large distances from main centres. In general, the staff are more junior than in tertiary referral centres and have less experience in teaching. In this environment, supervision of tutors and uniformity in the quality of teaching are hard to guarantee.
Our aim was to develop student rotations to peripheral hospitals in rural areas without students experiencing the disadvantage of isolation from adequate educational support.

Setting

The University of Newcastle took its first intake of medical students in 1978. Newcastle is an industrial city in New South Wales on the east coast of Australia. The population of the city and surrounding areas is about 500,000. The medical school offers a five year problem-based, community-oriented undergraduate programme (Hamilton, 1992,1993). Students work in small groups, and clinical work begins in the second week of First Year. During the third of five years, students spend an eight-week clinical attachment up to 400 km outside Newcastle in Dubbo, Gosford, Lismore, Maitland, Orange, Taree or Tamworth.

Students are seconded in small groups (two to eight students) to one of these seven centres, each of which has a district hospital serving a town and a rural community. All the hospitals have a strong commitment to the surrounding district. The students' experience is both hospital and community based. The hospital experience is mainly a clinical clerkship, with history taking, physical examination, documentation in patient's case records, ordering and interpreting investigations, and conducting procedures, all under supervision. The students are taught by the general practitioners and specialists whose patients are in the hospital and by the resident medical officers employed at the hospital. In addition, in each rural rotation the Faculty of Medicine engages a medical graduate as a clinical supervisor, with responsibility for the day to day supervision of students and tutors.
The students spend considerable time away from the hospital. Time spent with general practitioners and with specialists in their consulting rooms complements the hospital work. In some cases patients are seen at follow-up after discharge from hospital, but the majority of the community experience is primary care. Another aspect of the community work is that each student undertakes an in-depth attachment to a patient with a chronic disability.

The patient comes from the primary care general practice to which the student is attached so that the general practitioner is able to provide detailed insights into the medical and social situation. The nature of the patient's illness(es) varies, but an example would be an elderly woman with loss of mobility secondary to severe arthritis. The student visits the patient's home and interviews the family as well as the patient. In this case contact would be made with other health professionals, such as the occupational therapist, who would discuss issues such as modifications to the home and home appliances to maximise the patient's quality of life. This helps to provide an overview of the impact of the chronic disability on the patient and her family.

Other community-based work addresses environmental and occupational health issues. Students visit the workplace of local industries. The exact experience will vary according to the local industry but includes visits to abattoirs, saw mills, and farms. This aims to make students aware of potential health hazards in the workplace, to experience conditions of work, and to consider whether any threat to the environment is posed by the particular industry visited.

Assessment Procedures

The assessment related to the rural term rotation takes place in the country area. As a prerequisite to final assessment, each student must submit a log book certifying the satisfactory completion of procedural skills such as venepuncture, suturing, insertion of an intravenous line and intramuscular injection. Towards the end of the term, members of the Faculty of Medicine travel to each of the areas and conduct clinical assessments in professional skills with local tutors acting as co-assessors. Each student sees two patients as short cases of 20 minutes duration. The student is told the patient's presenting problem and is asked to carry out an appropriate physical examination. The criteria for the assessment are listed in Table I. For each short case the student is observed by two assessors - one is a full time member of the academic staff from the Faculty of Medicine at Newcastle, the other is a local medical practitioner. Thus each student will be assessed by two pairs of assessors - one for each short case clinical examination. If a student is rated not satisfactory, remediation is offered, together with subsequent reassessment. Students are provided with three opportunities to produce a satisfactory performance.

The second component of formal assessment is the presentation of the patient with a chronic disability. Each student presents at a seminar which is attended by Faculty members, general practitioners and other interested staff. This presentation summarises the student's perceptions about the patient with a chronic disability with whom the student has had extensive contact during the country term. In many instances the patient's own general practitioner is present at the seminar and is able to comment about the student' experience. The workplace visit is assessed by logbook certification of attendance.

Discussion

The Faculty of Medicine at the University of Newcastle, in common with many other medical schools regards experience in the community and in rural and district hospitals as a very important component of the student's learning. The challenge has been to devise assessment instruments which are able to reflect the Faculty's perception of the importance of these country terms. The system of professional skills assessment in the rural hospital is one which reinforces to students, to country term tutors and to the Faculty the importance of the rural rotation. The combined assessment with both Faculty and country term tutors as joint assessors helps to calibrate the Faculty's standards with the country term rotation and provides positive feedback to the tutors about the standard that the students have attained. It also ensures that the patients who are seen in the professional skills assessment have the same sorts of illness as the patients whom the students have been seeing during their attachment. This would not be the case if the professional skills assessment were conducted at a later date in the tertiary referral hospital. The system provides face validity for the assessment. It helps to influence the student's learning and ensures that the students devote a lot of time to improving their professional skills.

The involvement of general practitioners and Faculty members in the chronic disability presentations reinforces the importance of this area in the minds of all those involved. Once again there is a quality assurance component, as the general practitioners receive indirect feedback as a result of the seminar. In practice, almost all students are rated satisfactory in this assessment.

The clinical supervisor in each rural rotation is important in the overall quality assurance. He/she is a medical graduate with a part-time appointment to the Faculty of Medicine. This is a salaried position with payment as 0.25 of a Senior Lecturer. There are two student rotations of eight weeks to each country centre, so that the supervisor has a major responsibility to the Faculty of Medicine for 16 weeks each year. The role has both administrative and academic components. Supervisors organise the day to day activities of each student by liaising with local medical practitioners. The organisation of accommodation, details of the timetable, training of tutors, supervision of students and tutors, and overall academic and pastoral care of students are part of the supervisors' responsibilities. They attend a one day re-orientation/feedback session in Newcastle every two years. There has been minimal turnover among supervisors, so that they become very experienced with the Faculty's philosophy and are able to provide a stable Faculty presence in the rural areas. Two of the seven supervisors have held their appointments since the first country term attachments (in 1980), and the majority serve for at least five years.

The direct costs to the Faculty of Medicine for the rural rotations are considerable (Table II). The costs include payment to clinical supervisors, provision of learning materials (such as library books), transport (chartering aeroplanes has proved to be the cheapest and most convenient system) and the time of the academics and general staff in Newcastle. The annual cost is approximately $156,000 Australian. This is offset in part by benefits. The benefit of an expanded clinical base of patients is hard to quantify. Local tutors have proved to be both competent and enthusiastic as teachers and assessors. The country centres have tended to identify themselves with the Newcastle Health System, so that strong professional and postgraduate contacts are established and reinforced. Finally, there is a belief that students who have visited rural areas are more likely to return there as graduates. If that proves to be true, the investment will definitely be considered worthwhile.

The rotation to rural hospitals has proved to be extremely popular with students and staff alike. The assessment system seems to be acceptable and to reinforce the components of the attachment which the Faculty is seeking to emphasize. However the infrastructure required to support this component of learning is considerable.

Acknowledgements

I wish to thank Carolyn Fardon for calculating the costs of rural rotations and assessments and Joan Welsh for typing the manuscript.

References

Hamilton, J.D. (1992). A community and popultion-oriented medical school: Newcastle Australia. In: K.L. White, & J.E..J. Connelly (Eds). *The medical school's mission and the population's health.* New York, NY: Springer Verlag.

Hamilton, J.D. (1993). Community orientation: Ups and downs at Newcastle, NSW. *Annals of Community-Oriented Eduation, 6,* 35-42. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Table II. Annual Faculty resources for the 14 country term rotations in Year 3

Clinical supervisor payments	124,500
Travel	7,000
Biennial supervisors' meeting	2,000
Resources and equipment (books, videotapes)	7,000
Academic staff (educational administration and assessment)	13,500
General staff	2,000
Annual cost	156,000

Figures are in Australian dollars and based on 1993 estimates. The approximate cost for one student/week is $ 260.00 . Students meet the cost of their travel and meals.
The hospitals provide accommodation free of charge.

Table I. Rating form for short case assessment

Please rate the student as S (Satisfactory) or NS (Not Satisfactory) for the following criteria. (If the student has performed very well on one or more criteria, you may indicate this using the 'V' assessment).

The assessment criteria are:

		NS	S	V
1.*	Tells patient what she/he is going to do	_	_	_
2.*	Uses correct technique	_	_	_
3.*	Performs procedure without causing undue pain	_	_	_
4.*	Performs organised examination of the system; explains and interprets actions and findings	_	_	_
5.	Detects abnormality	_	_	_
6.	Interprets abnormality	_	_	_
7.*	Information presented in an organized fashion	_	_	_
8.*	Cause of abnormality discussed	_	_	_

OVERALL RESULT * _ NOT SATISFACTORY _ SATISFACTORY

* MLC[1] : To be satisfactory overall, students must be satisfactory on all criteria marked '*' and other criteria at assessor's discretion depending upon the difficulty of the case. (Remember, students are completing Year 3 of a five year course.)

[1] Mandatory level of competence

Annals of Community-Oriented Education
1994, Vol. 7, 389-398

The Student's Role in Assessment: Building a Progression in Problem-Based Learning (PBL)

L.C. Epstein and R.S. Northrup
Brown University
Providence, Rhode Island, United States of America

Abstract

The Affinity Group Program is a problem-based, small group, longitudinal learning activity which takes place over years 3 through 6 of the eight year combined premedical-medical curriculum at the Brown Medical School. Students extend their involvement with problems from discussions of paper cases and independent library work, to interviews with health workers and patients, and then to collaborative community projects. Paralleling this hierarchical progression of students' skills is a corresponding, progressively increasing participation by students in their own and in each other's assessment.

Students report that these activities are for many the first time they have received feedback on their personal and group interaction styles and techniques which are supportive yet critical. In addition, the activity of appraising others sensitizes students to previously unconscious aspects of their own styles. The training of faculty group leaders helps in their facilitation of this growth process. The emphasis on performance, rather than on intention, underlines recognition by students that it is the other person's perception of what has transpired, be it a colleague, teacher or patient/community member, which is important. These regular, on-going, assessments of performance, which are formative as well as summative, are powerful learning tools.

Introduction

The ability to assess one's own knowledge, attitudes, skills and clinical performance is essential to developing and maintaining professional competence in medicine. In addition, professionals must assess the competence and performance of others with whom they work. Developing skills in assessment, however, has not been a priority in medical education (Arnold et al., 1985; Henbest and Fehrsen, 1985; Maudsley, 1989; Gordon, 1991; Gordon, 1992).

According to the traditional educational model, assessment is the responsibility of the teacher. The teacher defines the content, criteria and methods of assessment, as well as the actions to be taken in response to the results. This model has recently evolved to more actively incorporate the student in the process and to put greater emphasis on the formative role of assessment (Bleys et al., 1986; Calhoun, 1988).

Requests for reprints should be sent to L.C. Epstein, Brown University, Box G-A207, Providence, RI 02912, United States of America.

The use of a problem-based learning (PBL) approach presents natural opportunities for such participation by students (Schmidt et al., 1987; Rezler, 1989). Students in PBL initially assess what they already know and what they need to learn afresh and they will then set their learning tasks based on that assessment. After gathering and processing the information they have sought, the students must assess how their understanding of the original problem has progressed and what gaps remain to be filled.

Brown University School of Medicine has developed a PBL- based programme which extends and enhances the assessment elements of PBL, called the "Affinity Group Program". It is a problem-based, small group, longitudinal learning activity which takes place over Years 3 through 6 of the eight year combined premedical-medical curriculum at the Brown University Program in Liberal Medical Education (PLME) (Epstein, 1992). The name "Affinity Group" derives from the fact that eight to ten students and one or two academics are grouped together according to mutual interests or "affinities", which provide "topical" foci around which groups implement a common segment of their learning activities.

The four-year sequence begins with standard PBL- style discussions of paper cases and independent library work. Subsequently students interview health workers and simulated as well as real patients, and ultimately participate in collaborative community projects (Table I). Paralleling this hierarchical progression of students' skills is a corresponding, progressively increasing participation by students in their own and in each other's assessment. This paper describes and justifies the progression of students' skills in self and peer assessment in the Affinity Group Program.

Involving Students in Assessment within Affinity Groups

During the initial, more classical PBL Affinity Group meetings, students participate in self and peer assessments during presentations of information gleaned from independent library or community research. Such assessment is modeled by specialists in communication, who join the groups during an early session and provide examples of both what to assess and how to present one's assessment to the vulnerable presenter.

Later in the programme, students take turns interviewing real or simulated patients, while others observe, take notes and assess. Afterwards, the group discusses the effectiveness of the interviewing techniques used, and the apparent attitudes conveyed to the interviewee by the interviewer's body language, choice of words, expression, eye contact, and so on. Such self and peer assessment is augmented by feedback from the patient about the tone and dynamics of the interview. The use of video recording provides direct visual as well as repeatable data for assessment, and preceptors help in pointing out aspects which the students may not have noticed. Students are the sole guardians of these videotapes, which underscores the point that these assessments are formative rather than summative.

Table I. Progression of students' role in assessment (self and peer assessment)

YEAR 1	PBL presentations (modelled by specialists in communications) * What to assess * How to present assessment to the vulnerable presenter
YEAR 2	Real or simulated patients * Students first critique their own interviews * Other students offer feedback * Effectiveness of the interviewing techniques used * Apparent attitudes conveyed * Body language, choice of words, expression, eye contact * Patient feedback about tone and dynamics of the interview * Video camera filming * Preceptor feedback
YEAR 3	Community interaction, presentations and health promotion talks * Students first critique their talk or presentation * Other students offer feedback * Input from facilitator and communication specialists * Video tape review * Feedback from community group * Assessment of "audience" and by "audience"
YEAR 4	Group debriefing discussions * Strengths and weaknesses * What worked, what didn't and possibly why

During the phase of interaction with the community, many of the projects involve presentations and health promotion talks before groups of community members. Communication specialists help with student feedback during practice sessions. Video taped reviews afterwards, along with group debriefing discussions, help to characterize strengths and weaknesses, what worked, what didn't, and possibly why.

To develop the students' skills and effectiveness in these activities, the students receive explicit training early in the programme on the elements that make up assessment: the purpose or "why?", the content or "what?", the format or "how?", and the net result or "now what?". Faculty group leaders are trained to facilitate the growth process for students to appraise themselves and each other.

Although the students' role in assessment within the affinity groups develops a hierarchy of skills, the progression is flexible rather than lock step. The students have extensive latitude in the interest areas (or affinities) of the group, as well as in the choice of activities and their sequence in order to meet agreed goals and objectives. The rationale for this approach is twofold: students are more eager to delve into areas they have selected themselves; and letting students participate in defining the important criteria is a key element in building appraisal skills.

For many students these assessment activities are the first time they have received feedback on their personal and group interaction styles and techniques which are supportive yet critical. In addition, the activity of appraising others sensitizes students to previously subconscious aspects of their own styles. The emphasis on performance, rather than on intention, underlines recognition by students that it is the other person's perception of what has transpired which is important, irrespective fo wether that person is a colleague, teacher, patient or community member. These regular, on-going assessments of performance, which are formative as well as summative, are powerful learning tools.

Initially, it is common for students to be reluctant to critique themselves and/or others. One approach to overcome this reticence is to identify explicitly the two major elements of effective feedback: defining those areas which have been done well, and those needing improvement. When presented in this fashion, feedback becomes less threatening, and students begin to actively solicit and offer suggestions for enhancement. Over time, they become aware that they themselves must bear substantial individual responsibility for the assessment process.

A second approach is for students to critique themselves before they receive group feedback. This permits the student to raise the issues of greatest personal concern or potential sensitivity before they are raised by others. As students are often harsher on themselves than they need to be, subsequent group feedback can be easier to take and may even contradict the harsher self-judgment.

Students occasionally miss important points in their evaluation. Feedback from the facilitator and a standardised patient can fine-tune the self and peer comments by directing attention to facets which were not previously obvious to the students or which defied comment.

As groups develop and participate in community projects and programmes, the students are challenged to adapt their style to local customs and audiences which may differ from themselves. Additional dimensions for assessment will then become important: assessment of, and by the audience, as well as by other members of the team .

Monitoring Student Progress

How do we monitor and respond to the progression of student competence in these areas?

In addition to the verbal formative assessment already described, four types of written, ostensibly summative assessment occur in each year. While all participants evaluate the programme, students and fellows rate faculty members, teachers rate students, and faculty staff and students rate fellows. Feedback to students addresses four major competences: problem-based learning and problem solving, self-directed learning, small group learning, and communication (Appendix). Although each group differs somewhat in how it uses these assessments, there are certain procedural approaches which are commonly followed.

Faculty staff are given assessment materials for their cohort early in the year and are instructed to share them with their students, in order to make general criteria explicit. The students are expected to participate in this regular, ongoing assessment process. The academics are asked to discuss with the students their individual profiles and to help them to adjust their self-assessments appropriately.

The global student grade is simply a "satisfactory (S)" or a "no credit (NC)", which serves to place the emphasis on the profile of skills and the written comments at the end of the form. The different skills areas are rated on a five point, verbally anchored Likert scale. There are then three sections for written comments for the facilitator's comments on demonstrated student strengths, facilitator's suggestions for areas that require attention, and student's comments on the assessment. In each succeeding year, as more is expected of the students, additional items are added in each category.

An Affinity Group Example

While the above sequence of progressive involvement in assessment is generally followed by Affinity Groups, flexibility in the programme encourages the principles to be applied in alternative, innovative ways. The Affinity Group, led by one of the authors (RSN), may here serve as an example of the range of student involvement in assessment. The Group formed around a shared interest for International and Community Health and with strong commitment to involvement in community service.

Initially, this Year 3 group began with a classical PBL case of an Hispanic immigrant infant who had died of dehydration, largely because of failure of the health care system to surmount the cultural and language barriers which interfered with achieving maternal understanding and cooperation. The students not only used the library to investigate pertinent aspects of diarrhoea and oral rehydration therapy, they also visited the Emergency Room where the child had received care. Through speaking with staff, students explored the procedures for dealing with patients who could not speak English or who were unable to afford prescribed medicines. Assessment in the form of comments on the subsequent presentations of each of the students was informal and primarily aimed at identifying aspects of the exploration which still required attention. As such, the feedback served to enhance the group's approach to the overall "problem or case", rather than appearing as judgmental of the individual.

Later on the students became engaged in a project to conduct a Health Fair for a housing unit of elderly persons. Here the direction of assessment was more toward determining whether the presentations, posters, or arrangements were likely to meet the needs of the expected audience. Students modified their approaches substantially as a result of group feedback and developed their own form to obtain feedback and suggestions from the elderly persons participating in the Fair. Here too, assessment enhanced effectiveness and collaboration in the task. In addition, students now began to acquire skills for tailoring their communication to the specific needs of the audience, as well as skills in developing the priorities and the tools for assessment.

In the following year, Year 4, the students launched a project to carry out an educational programme on AIDS for two groups of young people from the inner city of Providence, one ages 8-12, the other ages 14-17. In contrast to the health fair, this effort was predominantely verbal, with visual material used to support oral presentations. Formative feedback during the practice presentations for each talk or demonstration helped to identify elements to improve effectiveness. The communication specialists with the Affinity Group Program joined the group for one session and provided a model for the style of giving feedback. By emphasizing their own reactions to the presentations and the presenter (e.g. "I found myself a bit confused after listening to your description", rather than using external judgment phrases (e.g. "That was bad"), they illustrated by example how to focus on behaviour and the response to it. In addition, they expanded the range of indicators to which the students should be sensitive, commenting on body position, choice of words, presence or absence of humour, level of interaction with the audience and other stylistic aspects, as well as the content and organisation to which the students were already responding. The use of video tapes during the practice sessions and the actual presentations allowed the group to define aspects to work on, and provided an opportunity to review the outcome together. Overall, students came to view these assessments as useful in identifying areas that could be improved rather than applying static value judgments.

In their third year (Year 5), the group planned a field project for the Summer on the U.S.-Mexican border. Assessment-related activities focused on group dynamics and the quality and effectiveness of the group's planning meetings. Comments related to the behaviours which facilitated productivity and task-orientated decision making, and also those informal, motivational inputs that made the group a positive, supportive experience. The assessment elements helped the students explicitly to identify ways to combine productivity and task orientation with warmth and caring.

During the month-long field project, the students continued to assess each other on interactions within the group and the quality of materials being produced during the field activities, e.g. survey instruments, educational handout on diarrhoea, presentations of findings to local paediatricians. They also assessed the effectiveness of their communication with the Mexican Americas with whom they were working. Students devised specific activities for judging effectiveness and applied them internally as well as externally by comparing their own assessment with that of their "audience".

This example shows that the application of the formal assessment activities varies from group to group. Nevertheless, the combination of ongoing assessment with project planning and implementation is a common denominator among the groups. Through this process students make substantial progress in becoming skillful assessors, as well as skillful communicators for formative feedback and educational messages.

Student Course Performance Reports

How have students fared in this progression? In addition to the above ongoing assessment, all students participate in the interactive assessment at the end of the year. In many ways this summative assessment is actually a written version of the most recent formative assessment, as the same criteria have previously been applied more generally during ongoing assessments. Faculty staff have given almost every student in the Affinity Group Program an overall rating of "S" or satisfactory. In the five completed academic years for affinity groups, 670 students have received the equivalent of "S", two students have receive "NC", and four students have received an "Incomplete".

Despite the clearly demonstrated reluctance of the staff to give students a failing "NC", the academics were quite willing to spell out specific areas where additional attention was needed. They did give four's and five's (the lowest rankings on the Likert scale) to students whose performance, although adequate overall, was unsatisfactory in particular areas. Thus the full 1-5 range of ratings was used for students, preferring to communicate to the students areas of deficiencies, rather than to fail them or to ignore the problem. This ability to focus on areas that were deficient while still giving a satisfactory rating seemed to encourage teachers to be forthright in their ratings and this was well received by the students.

For example, one student who received an "S" and an overall mean rating of 2.8, received six 4's and two 5's representing major reservations on the part of the teacher. The written response by the student was interesting, as the student agreed that she found it difficulty to speak in the group. Moreover, she indicated that it "was helpful to talk about this with them (the teachers and the group). This in itself has helped (her) , ... gives (her) a better perspective, ... motivates (her) to take risks, ... especially when (she) knows she has their (group and staff) full support."

The students seemed to have generalised the formative, profile approach to assessment and were more interested in the question, "How can I get better?", than in the question "How well did I do?". As indicated in the written comments, there was consensus among students and staff that students did improve substantially over time. Areas of improvement most frequently cited in the text included awareness of the complexity of cases, ability to reconcile conflicting attitudes, awareness of the importance of social factors, ability to deliver and accept constructive criticism, ability to learn from teachers and peers, ability to analyze and refine skills, and awareness of the scope of the physician's role.

Summary

The Affinity Group Program at Brown University School of Medicine builds a four year hierarchy of PBL, which serves to integrate the premedical and medical experiences around a problem format, while providing opportunities for early clinical experiences. A critical element of the programme is the involvement of students in the assessment process. Students participate in the development and application of the criteria for self and peer performance-based assessment by using a significant experiential component. In the process, students learn to give and receive constructive feedback in the areas of content, format and style. The programme emphasizes the powerful learning aspects of assessment. It encourages the students to be less focused on a snapshot of performance at a particular point in time than on the need for ongoing assessment of the process of learning.

References

Arnold, L., Willoughby, T.L., & Calkins, V.E. (1985). Self-evaluation in undergraduate medical education: A longitudinal perspective. *Journal of Medical Education, 60,* 21-28.

Bleys, F.C., Gerritsma, J.G., & Netjes, I. (1986). Skills development by medical students and the influence of prior experience: A study using evaluation by students and self-assessment. *Medical Education, 20(3),* 234-239.

Calhoun, J.G. (1988). Evaluating medical student clinical skill performance: Relationships among self, peer, and expert ratings. *Evaluation and the Health Professions, 11(2),* 201-212.

Epstein, L. (1992). Affinity groups: Mentoring plus. *Rhode Island Medical Journal, 75,* 409-411.

Gordon, M.J. (1991). A review of the validity and accuracy of self-assessments in health professions training. *Academic Medicine, 66(12),* 762-769.

Gordon, M.J. (1992). Self-assessment programs and their implications for health professions training. *Academic Medicine, 67(10),* 672-679.

Henbest, R.J., & Fehrsen, G.S. (1985). Preliminary study at the Medical University of Southern Africa on student self-assessment as a means of evaluation. *Journal of Medical Education, 60,* 66-69.

Maudsley, R.F. (1989). Effective in-training evaluation. *Medical Teacher, 11(3/4),* 285-290.

Rezler, A.G. (1989). Self-assessment in problem-based groups. *Medical Teacher, 11(2),* 151-156.

Schmidt, H., Dauphinee, D., & Patel, V. (1987). Comparing the effects of problem-based and conventional curricula in an international sample. *Journal of Medical Education, 62,* 305-315.

APPENDIX

Assessment

Similar forms appropriate to the lower levels in the PBL hierarchy are used in earlier years. The forms were developed in consultation with the Problem-Based Learning Program of the Tufts University School of Medicine. Much of the form is modeled on the forms developed at Tufts University in collaboration with L.A. Branda from McMaster University.

This form should be returned to the Dean's office in the accompanying envelope. Copies will be sent to the group leaders and the student.

STUDENT: AFFINITY GROUP FACULTY:

PERFORMANCE TO DATE: ___SATISFACTORY ___UNSATISFACTORY

Facilitator Comments: (Use additional page if necessary)

Demonstrated strengths:

Areas that require attention/suggestions:

Facilitator Signature: Date:

Student Comments: (Use additional page if necessary)

Student Signature: Date:

Below is an overview of the ability and skill areas that we're targeting in working with our students. Please circle the number appropriate to your evaluation of this student's performance in each area.

STUDENT: AFFINITY GROUP FACULTY:

(circle appropriate number)	No Reservations			Major Reservations		Check if Not Observed
COMPETENCY IN COMMUNICATION						
- Ability to:						
o interact with patients or others involve in a case in a supportive and empathic fashion	1	2	3	4	5	___
o elicit pertinent information and attitudes from patients or others involved in case	1	2	3	4	5	___

(circle appropriate number)	No Reservations			Major Reservations		Check if Not Observed
o share relevant information with patients or others involved in a case	1	2	3	4	5	___

COMPETENCY IN PROBLEM BASED LEARNING AND PROBLEM SOLVING

- Ability to:

o identify problems and issues relevant to the case at hand	1	2	3	4	5	___
o acquire and organize information pertinent to the issues	1	2	3	4	5	___
o synthesize, integrate, and interpret information relevant to the issues	1	2	3	4	5	___
o formulate hypotheses for further investigations	1	2	3	4	5	___
o identify appropriate learning resources	1	2	3	4	5	___
o identify what was not learned and further work needed	1	2	3	4	5	___
o constructively contribute to the Affinity Group semester project	1	2	3	4	5	___
o expand the case to a systems perspective	1	2	3	4	5	___

COMPETENCY IN SELF-DIRECTED LEARNING

- Ability to:

o recognize personal educational needs	1	2	3	4	5	___
o formulate a plan for learning	1	2	3	4	5	___
o utilize appropriate resources	1	2	3	4	5	___

COMPETENCY IN SMALL GROUP LEARNING

- Ability to:

o work effectively in a group, showing responsibility and dependability	1	2	3	4	5	___
o relate to and show concern for other members of the tutorial group	1	2	3	4	5	___
o receive and give criticism	1	2	3	4	5	___
o express oneself within a small group setting	1	2	3	4	5	___
o further the adaptive work of the group	1	2	3	4	5	___
o recognize small group dynamics which can either promote or interfere with the task	1	2	3	4	5	___
o interact effectively with peers	1	2	3	4	5	___

Annals of Community-Oriented Education
1994, Vol. 7, 399-405

Assessing Student Electives in the Newcastle Medical Course

A. M. Brown and R.L. Henry
University of Newcastle
New South Wales, Australia

Abstract

The value of elective studies in medical education is well accepted although not well documented. Problems of assessment include the variety of topics and locations, the differing attitudes and experiences of supervisors, and the fact that supervisors may not have any regular contact with the formal medical course.

The aims of the electives in the Newcastle, Australia medical curriculum are to enable students to develop skills of independent learning, to pursue excellence and to broaden their range of experience. Students are expected to: 1) design a project, decide how to implement it, define problem areas and resource requirements in advance, critically analyse the appropriateness of and justification for the project; and 2) analyse the usefulness and application of information and experiences obtained, summarise the conclusions that could be drawn from the project, reassess the approach to the original project plan and make a critical appraisal of the contribution of the elective period to their own personal and medical career development.

Students submit to the Faculty an "elective contract" outlining their objectives, how they intend to meet these objectives and the justification of the topic in relation to their medical education. A supervisor's report and a student's report is submitted at the end of the elective. This ensures that thought is given before, during and after the elective to its educational benefit. The fact that the Faculty takes the elective so seriously has helped to reinforce for students that this component of their learning is of major significance.

Introduction

Most medical schools aim to produce graduates who have a broad based medical education and are capable of working in the hospital system at the time of graduation. Such a graduate would also be what has been referred to as an "undifferentiated doctor", with the notion that specialisation would occur after graduation. This means that the larger proportion of medical curricula is core rather than elective. This contrasts markedly with undergraduate degrees such as Arts or Science where there are broad ranges of options and where the subjects studied by undergraduates are diverse and result in graduates with a much more heterogeneous experience.

Requests for reprints should be sent to A. Brown, University of Newcastle, Faculty of Medicine, 86 Platt Street, Waratah, N.S.W. 2298, Australia.

Although core curriculum dominates medical courses, students are offered elective subjects in most medical schools. In North America and some other countries this usually takes the form of "selectives" where students choose from a range of subjects offered by the Faculty (Bridges et al., 1992; Valdes-Dapena and Valdes-Dapena, 1989; Craig, 1992; Geffen et al., 1991; Craig and Page, 1987; Bauman and Hale, 1985; Bertman and Marks, 1985; Sachs et al., 1984). By contrast in Australia, New Zealand and Great Britain the elective is often a completely free learning experience rather than a choice of predetermined, structured courses (Geffen et al., 1991; Northrup, 1991; Harth et al., 1990; Saltman, 1985; Graham, 1986; Carter, 1985; Vora, 1985). Such an elective system, where students design their own experience, provides specific challenges when it comes to assessment. The aim of this paper is to address the assessment of electives in the medical course at The University of Newcastle, New South Wales, Australia.

Electives in the Newcastle Medical Course

The University of Newcastle has a five-year medical course in which the majority of students come straight from their secondary schooling. The curriculum is problem-based and community-oriented. Students begin clinical contact in the first fortnight of their course, and there is complete integration of basic sciences and clinical medicine. Teaching and assessment is conducted by domains (Henry, 1994). The five domains are Professional Skills; Critical Reasoning; Identification, Prevention and Management of Illness; Population Medicine; and Self-Directed Learning. Electives are a part of the domain of Self-Directed Learning. At the end of Years 1 and 2 students undertake a two-week period of elective study and at the end of Years 3 and 5 students have eight-week electives.

The undergraduate programme objectives for the domain of Self-Directed Learning are: By the time of graduation students will demonstrate ability to take responsibility for evaluating their own performance, implementing their own education and contributing to the education of others, by:

1. finding and using biomedical information required for the understanding and management of medical problems, by using available resources, media and techniques;
2. setting appropriate self-educational objectives and devising appropriate means to meet them;
3. monitoring their own progress in the acquisition of information and skills;
4. interacting with professional colleagues to monitor and evaluate each other's performance for the purpose of mutual education;
5. critically evaluating their experience of the Faculty's education programme;
6. recognising that medical education in its full sense is a lifelong activity and investing time in the maintenance and further development of their own knowledge and skills, including the pursuit of higher professional qualifications.

Electives fit easily within this framework and help students to focus on the development of the skills of independent learning. The specific objectives of the elective are to define a suitable project and how to implement it, to carry out the project, to assess the information obtained, to analyse the usefulness of the experience, and to consider how the process could have been improved.

The Problem of Assessing Electives

To assess electives is difficult, and this is perhaps why medical faculties often assess the elective experience by the supervisor's report. This really serves only to certify that the student did attend the elective placement.

Newcastle medical students choose a wide range of topics (Table II.) Topics are approved if the students are able to justify them for their medical education, and if appropriate means for meeting 'their specified objectives have been identified. Some students, being adventurous and imaginative, do unusual things in exotic places.

There are differences in the difficulty of arranging an elective. It is relatively easy for a student to find a supervisor in a teaching hospital that she or he knows and to spend a few weeks there. It is much more challenging to launch into a new situation in a new city or new country. Can we, or should we, take this difficulty in arranging the elective into consideration?

Similarly, workloads for students vary enormously. They are dictated by the nature of the topic, the culture of the institution, the whim of the supervisor and the enthusiasm of the student.

It may seem appropriate for the main emphasis of assessment to be on the supervisor's report of what the student actually did. However, this would require consistency between supervisors that is unlikely to be possible. Many supervisors of electives (particularly overseas) have no direct connection with the Faculty of Medicine at The University of Newcastle, N.S.W. and may never have had contact with any of our students. Although written briefing is provided, the supervisors' expextations may differ widely from those of the Faculty or the student. Most supervisors' reports impart little more information than to document attendance and participation in activities by the students.

These considerations raise the question whether electives can be better assessed by methods other than attendance, and whether it is possible to grade students in their electives.

The Newcastle, NSW Approach

The Newcastle Medical School has been faced with these difficulties and with the requirement that performance in electives be graded, so that it can be incorporated into the student's overall grading for the award of Honours in Year 50.

Assessment of electives can be addressed by considering specific objects for the electives programme and assessing against them. The School's objectives for electives are that the student:

a. generate a project, decide how to implement it and define problem areas in advance;
b. critically analyse the appropriateness of, and justification for the project;
c. define resource requirements in advance;
d. analyse the usefulness and application of information and experiences obtained;
e. summarize conclusions which can be drawn from the project;
f. in retrospect re-assess the approach to the original project plan and define changes which would have improved it; and
g. make a critical appraisal of the contribution of the period to personal and medical career development.

The procedure for the elective is that each student identifies some personal goals and the way in which these goals can be met (including finding a supervisor). The students then submit to the Faculty their proposed contract with this information and a justification of why this elective will help their medical career. Students are given a free rein in choosing the topic and location for their elective. There are no formal guidelines on how to choose a topic, and the Faculty does not direct students to choose from a set of structured courses. Thus the choice of topic can be very broad, and it is up to the student to justify the elective on the basis of defined objectives. The elective's contract also has a section to be signed by the prospective supervisor, and this helps to ensure that students have supervisors who do undertake to supervise them. Students may undertake more than one topic during the elective period but they have to submit separate contracts for each. After the elective has been completed, the student has to submit a report on the experience, together with a report from the supervisor.

This encouragement for students to select their own elective produces a very wide range of topics in diverse locations. Table I and II show the rage of destinations and general topics for students of their Year 3 and Year 5 electives in 1993. Electives in Australia included topics such as naval and tropical medicine, health problems in homeless children, Royal Flying Doctor Service, and general practitioner management of dental pain, as well as more standard attachments in the major clinical disciplines. Overseas electives were in all continents except Antarctica. In 1993, students visited 24 different countries ranging from Argentina to Zimbabwe.

Assessment

Assessment of the elective is against the set objectives. The first three objectives (above) are judged from the contract while the last four are assessed by the report that the student submits at the end of the elective.

There are three components to the assessment:

- the contract (the plan) for the elective (assessing objectives a, b, and c),
- the report from the supervisor, and
- the student report (assessing objectives d, e, f, and g).

Table I. Main destination of Year 3 and Year 5 student electives in 1993

	Students	**%**
Newcastle	47	37.6
Other in New South Wales	15	12.0
Interstate capital city	4	3.2
Other interstate	5	4.0
Developed country	29	23.2
Developing country	25	20.0
TOTAL	125	100

Table II. Elective topics for Year 3 and Year 5 students in 1993

	Topics	**%**
Medicine + specialties	39	19.1
General Practice and other primary care	35	17.1
Accident and emergency	33	16.1
Reproductive medicine	23	11.3
Paediatric medicine and surgery	16	7.8
Others topic	10	4.9
Basic and diagnostic sciences	9	4.4
Surgery and specialties	8	3.9
Remediation	7	3.4
Ambulance and paramedics	5	2.5
Aboriginal health	5	2.5
Publich health and specialties	5	2.5
Alternative therapies	3	1.5
Psychiatry	2	1.0
Other clinical disciplines	2	1.0
Allied health professions	2	1.0
TOTAL	204	100.0

Note: students may undertake more than one topic in the elective period. The number of topics exceeds the of number students.

As with most assessment instruments in the Newcastle, NSW medical course, second attempts at assessment are possible. The contract is assessed before students are permitted to commence the elective. At this stage a number are rejected at first assessment and students are required to clarify or amplify their objectives, implementation or justification of the topic.

Similarly some student reports may be rejected at first assessment, usually because the report is grossly shorter than the required length or because it does not address some of the criteria (objective d, e, f or g).

For the assessment of the contract, three specific aspects are assessed - the objectives, the implementation and the justification, and the contract is assessed as a whole. For each aspect, students are graded "satisfactory" (S) or "not satisfactory" (NS). Similarly for the student report there are four aspects that are assessed S or NS separately. These, together with the supervisors report, make up nine assessment points in the Domain V score.

In Year 5 of the course, students are graded slightly differently so that Honours may be awarded. Rather than a simple S or NS decision, students are rated "not satisfactory", "satisfactory", "good", or "very good" for each aspect. This provides a greater spread of marks to be added to the honours calculations. The criteria for "good" or "very good" rather than "satisfactory" have not been clearly defined. However, a single assessor judges all contracts and reports for a single course year. Generally, the "very good" classification is reserved for the small group of outstanding contracts and reports. "Satisfactory" is used for those who go to second assessment or have done only the bare minimum.

This method does allow a spread of marks for the elective (Fig. 1).

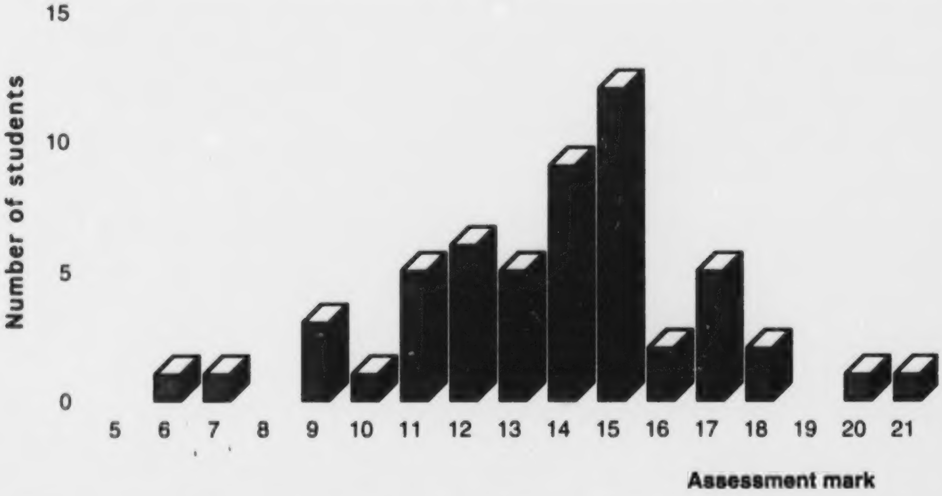


Figure 1. Distribution of scores for Year 5 elective, 1993 at first assessment. Maximum possible score 21

Conclusion

The method of assessing electives outlined here is not perfect. Although assessment is judged against defined objectives, it is likely that some topics and locations may be easier than others.

As this approach still represents an uncertain assessment instrument, it unlikely that students would be prevented from progressing in the course or from graduating on the basis of a poor elective performance alone.

References

Bauman, K.A., & Hale, F.A. (1985). Bringing the homosexual patient out: Teaching the doctor's role. Medical Education, 19, 459-462.

Bertman, S.L., & Marks, S.C. (1985). Humanities in medical education: Rationale and resources for the dissection laboratory. *Medical Education, 19,* 374-381.

Bridges, A.J., Hazelwood, S.E., Reid, J.C., Sharp, G.C., & Mitchell, J.A. (1992). Effectiveness of an inpatient-based rheumatology elective. *Academic Medicine, 67,* 866-867.

Carter, T. (1985). Baragwanath Hospital. *Medical Journal of Australia, 142,* 515-516.

Craig, J.L., & Page, G. (1987). Teaching in medicine: An elective course for third-year students. Medical Education, *21,* 386-390.

Craig, J.L. (1992). Retention of interviewing skills learned by first year medical students: A longitudinal study. *Medical Education, 26,* 276-281.

Geffen, L.B., Birkett D.J., & Alpers J.H. (1991). The Flinders experiment in medical education revisited. *Medical Journal of Australia, 155,*745-750.

Graham, J.J. (1986). Student electives and the getting of wisdom. *Medical Journal of Australia, 144,* 531-533.

Harth, S.C., Leonard, N.A,. Fitzgerald, S.M., & Thong, Y.H. (1990). The educational value of clinical electives. *Medical Education, 24,* 344-353.

Henry, R.L. (1994). The implementation of a philosophy at Newcastle. *Annals of Community-Oriented Education, 7,* 79-92. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Northrup, R.S. (1991). Preparing students for overseas electives. *Academic Medicine, 66,* 92.

Sachs, L.A., McPherson, C., & Knopp, W. (1984). Elective modules in the behavioural sciences. *Medical Education, 18,* 11-14.

Saltman, D. (1985). Student elective. *Medical Journal of Australia, 142,* 498.

Valdes-Dapena, M., & Valdes-Dapena, A.M. (1989). A senior elective program in anatomic pathology. *Archive of Pathology and Laboratory Medicine, 113,* 330-332.

Vora, R. (1985). Bangladesh: A confrontation with reality. *Medical Journal of Australia, 142,* 516-517.

Annals of Community-Oriented Education
1994, Vol. 7, 407-418

Assessing Community Health Managers in A Problem-Based Learning Curriculum: The ICHM Recipe

G. De Virgilio
Istituto Superiore di Sanità
Rome, Italy

Abstract

This paper describes the Participant Assessment System (PAS) developed at the "International Course For Primary Health Care Managers At District Level In Developing Countries" (ICHM) at the Istituto Superiore di Sanità in Rome, Italy. The system takes into account that the Course adopts Problem-Based Learning in the residential semester and a more traditional field-work assignment in the second semester. The general outline and rationale of the ICHM PAS are presented, together with a description of the tests. The aim is to measure performance in content, communication skills and group dynamics. Formative and certifying tests attempt to provide the best environment for the students to demonstrate their progress. Great emphasis on feedback stresses the use of formative assessment sessions.

The main problems encountered and modifications envisaged for the future are also described.

Introduction

"The minestrone of assessment methods at ICHM is simmering nicely. It is nutritious, contains some interesting ingredients, yet is made to a sensible basic recipe from the freshest available produce." This gastronomic parallel is taken from an external evaluation report (Jolly, 1991) that looks at the Participant Assessment System (PAS) at the "International Course For Primary Health Care Managers At District Level In Developing Countries" (ICHM).

The ICHM Master's Course, born in 1988, was the response of the Italian Government Technical Co-operation (Direzione Generale per la Cooperazione allo Sviluppo, DGCS) to the need for improving the managerial skills of health workers at intermediate level. The training is implemented by the Istituto Superiore di Sanità (ISS) which is the research and training division of the Italian Ministry of Health. ICHM works closely with the World Health Organization (WHO) as a Collaborating Centre in Training and Research in District Health Systems.

The course is conducted in English; it lasts one year and accepts 24 participants from Africa, Asia, Latin America and Italy.

Requests for reprints should be sent to G. De Virgilio, ICHM Didactics Co-ordinator, Istituto Superiore di Sanità, Aula Missiroli, V.le Regina Elena 299, 00161 Rome, Italy.

During the first semester participants are to acquire the knowledge, skills and attitudes necessary to become effective district health managers. The second semester (De Virgilio et al., 1994) is used for applied research assignments in various overseas field sites (from Brazil to Uganda to Nepal).

It was decided that effective training for health managers should be problem-based, experiential, learner-centred, and promote team co-operation as well as sharing past experiences. With the collaboration of participants and external advisers ICHM staff have developed a teaching-learning method (De Virgilio, 1993) which finds its main pillar in Problem-Based Learning (PBL). A supportive assessment system has been constructed. A major challenge was to devise a process that would measure the degree of attainment of learning objectives that were set by the participant themselves.

Outline and Rationale of the Participant Assessment System (PAS)

A complete outline of the ICHM PAS is presented in Table I. The Table is taken from the Course Year Book that is given to participants at the very start. While this also provides information on how the participants will be assessed, further details are given by the facilitator when they start a new module.

On the day of registration, the participants' language skills (fluency and degree of comprehension) are assessed. Anyone falling below a satisfactory level of English is not allowed to start the Course; those whose English only needs some improvement are helped in obtaining language tuition. In each module (Primary Health Care (PHC), Management, Planning, Evaluation and Field Work) three major areas are considered: content (technical knowledge and skills relevant to PHC management), communication skills and group dynamics.

Various instruments and tests to measure participants' progress are listed in Table I for each area.

Assessments may be formative or certifying. Formative assessment is designed to give feed-back to the participant on his/her strengths and on areas that can be improved by devising appropriate corrective action. Marks are not assigned on formative occasions. While certifying assessment also entails feed-back, the test is graded and contributes towards progression in the course and the final certificate. Most of the tests are given first in a formative and then in a certifying format. The aim is to familiarise the participants with the instrument, to facilitate self-assessment of progress, and to provide additional learning opportunities.

Two Pass or Fail Barriers occur during and at the end of the first semester; they protect the group from carrying anyone who is below a set standard. That is particularly important for avoiding problems in the second (field work) semester. The ICHM cumulative pass record for the award of the Master's certificate is 95% (Table II).

Table I. Participant assessment outline, ICHM 1992

MODULE	Content (always certifying)	Communication skills/ Group Dynamics (formative)	Communication skills/ Group Dynamics (certifying)	Modele & Max Com. Score	Pass Mark
PHC	Individual written test (10 pts)	oral presentation skills: weekly peer feedback, weekly facilitator feedback, final feedback by facilitator	None	10	
MANAGEMENT	Individual written test Plan of Action (10 pts)	weekly peer feedback, weekly facilitator feedback	Oral presentation skills (5 pts) assessment by facilitator (5 pts)	20	
Pass/Fail Barrier				30	15/30
PLANNING	Individual written test Evaluation Report (10 pts)	writing technique: weekly peer feedback, weekly facilitator feedback, final feedback by facilitator		10	
EVALUATION	Final report (20 pts, group mark) Final report presentation (5 pts)	weekly peer feedback weekly facilitator feedback	Writing technique (5pts) assessment by facilitator (5 pts)	20	
Pass/Fail Barrier				60	35/60
FIELD WORK			assessment by field tutor (10 pts) oral presentation skills (5 pts)	40	
Master Certificate Award				100	60/100

Table II. Pass rate 1988-1992

Year	**Failures**			
	Semester I	Semester II	Participants	Pass rate
1988	0	2	18	90%
1989	0	1	24	96%
1990	1	0	24	96%
1991	0	0	24	100%
1992	1	0	24	96%

A considerable amount of time is allocated for formal feed-back: 3.5 hours for individual feed-back and 10 hours for group feed-back. Much written feed-back is also given by providing model answers to tests and comments on more elaborate papers. The time spent on informal feed-back and consultations with staff (both to groups and individuals) is likely to be even more extensive.

Care is taken that group facilitators are not used to assess progress in content and communication skills. They are, however, asked to assess group dynamics. A facilitator spends from 24 to 36 hours with his/her group in any one module, s/he is in the best position to assess the group work of each member.

In order to discuss the rationale of the ICHM PAS it is necessary to describe how modules and problems are constructed. A module deals with one or more General Learning Objectives (GOs) which are derived from a list of tasks which a district health manager might have to undertake. The multi-disciplinary course staff break down the GOS into Intermediate Learning Objectives (IOs), while the course participants will be responsible for the identification of Specific Learning Objectives (SOs). A tentative list of SOs is prepared by the staff, in order to construct relevant tests. A wide pool of objectives that have been identified by participants in previous years helps in anticipating specific learning needs. An effort is made to phrase SOs as measurable entities; the aim is to provide a solid base for assessing their level of achievement. Table III provides an example of the three levels of objectives described above. Staff experienced in respective SO are responsible for suggesting the most appropriate teaching/learning session to attain it. It may, therefore, happen that some SOs are pursued through a problem and some through a group exercise, a workshop, a seminar or a computer assisted learning programme (the last four learning formats are described as "Non-PBL sessions").

The same staff, in collaboration with the course co-ordinator, decide which type of test can better measure the achievement of the SOs, for which they are responsible. A model answer has to be provided and an acceptable level of performance (ALP) must also be set. The system enables one examiner to mark the test, ensuring great efficiency in the use of staff time, and timely feed-back, together with an equal degree of subjectivity. When the examiner is in doubt about grading an answer, the author is consulted. The same is true for the participants, when clarification or differences of opinion are to be resolved.

Table III. An example of the three levels of objectives

The following objectives are taken from the Management Module.

General Objective (set by staff):
- to be able to manage primary health care related human resources.

Intermediate Objectives (set by staff) to be able to:
- recruit, select, and allocate health workers;
- motivate and foster good communication among health workers;
- carry out effective supervision of health workers;
- establish an effective system of continuing education.

Specific Objectives* (set by participants):
- to identify an effective communication process: meaning, methods and its role in the management of health workers at District level;
- to describe theories, strategies and methods of motivating health workers;
- to describe the supervisory process, its definition, elements and methods;
- to list and describe different types of leadership;
- to describe the delegation process in its definition and features.

*This list is not exhaustive.

The Tests

The main instrument used to measure achievement in the area of "content" is the Individual Written Test (WT) which is performed in all the four residential modules. It has two different formats.

The first, a mix of short answer questions and short problems/ exercises, is performed in the first two modules. Examples of such items are given in Table IV. Participants can select test items which are related to the SOs they have developed best during the module. They are asked to cover a certain number of items for each section of the test: each section covers one IO. The test format allows the participants to be assessed on the SOs they had identified in the module. This also ensures, to a certain extent, the coverage of the broader category of objectives (IOs and the related GO).

The test is performed at the very end of the module, and no reference books are allowed; certain facts have to be recalled, in order to achieve some module objectives (e.g. a simple formula to calculate the cost-effectiveness of a given health intervention).

Table IV. Examples of individual written test items*

A short answer questions:

Q. List five of the most common steps in selecting and hiring health workers.

A short problem:

Q. You are planning to expand your immunisation coverage from the present 1500 fully immunised children (FIC) to 2000 FIC in 1993. The present budget for immunisation (1992) corresponds to 7.500 USD.

Your accountant provides you with the following data:

Coverage (FIC)	1500	2000
Costs (USD)		
Average cost per immunised child	5	4.87
Incremental cost per FIC	3.5	4.5

How would you calculate the following:

1) The Incremental cost for the expansion to 2000 FIC
2) The total budget that you will need to plan for the year 1993 (2000 FIC)

*To save space examples of Multiple Choice Questions and True & False Questions are not presented.

The second format of the WT is used in Modules 3 and 4 (Planning and Evaluation). It consists of managerial papers: a Plan of Action and an Evaluation Plan. They are progressively produced during the respective module through consultation of pertinent human and material resources. They are closely interlinked with the problem and reflect the main themes of the case under study. The context and much of the data are derived from the material distributed and discussed during the module. As the "problems" are set in real countries, additional data and information can be obtained from the existing literature. These papers are assessed for both content and writing skills. This test looks for higher level skills which build on knowledge and skills acquired and assessed in the first two modules.

The resemblance of this exercise to "real" managerial documents is impressive.

Semester I (Residential period with PBL)

Individual written test

The Individual Written Test is performed individually and aims to assess knowledge and technical skills related to health management. It is implemented in the two formats described above. Writing skills related to the production of managerial documents are also assessed through this test in Modules 3 & 4.

Oral presentation skills assessment

The Oral Presentation Skills Assessment is to test ability to transmit information effectively and efficiently to an audience. It is implemented as a micro-teaching exercise where only presentation skills are analysed. The participant presents an issue of his/her choice related to the module's learning objectives. After self-assessing his/her own performance, comments are invited from the rest of the group. The evaluator then gives his/her feed-back. Participants and staff base their feed-back on a proforma (Table V). Most of the aspects are measured by a set of criteria explained in a handout which was distributed during an introductory session on presentation skills.

Weekly peer feed-back

The Weekly Peer Feed-back reviews participants' ability to deal with group dynamic issues. Groups meet to discuss their progress and evaluate their own and the facilitator's performance to ensure and maintain the smooth running of the group. To do this, participants work initially on a structured form devised by their predecessors. The form contains all those elements judged by the participants to be important for working well together. After five to six weeks they are asked to revise the previous year's form according to their own priorities. In 1992 the main areas included group dynamics, learning process and use of resources. Peer feed-back is formative and, therefore, never carries a certifying value.

Feedback and assessment by the facilitator

The "final facilitator feed-back" aims to identify a participant's ability to work effectively in the group and provides feed-back on an individual basis. It is carried out in a participative manner where facilitator and participant try to identify strengths, areas for improvement and remedial action. It takes place at the end of each module and is formative. The "final assessment by the facilitator" has the same objective, structure and timing as the feed-back. This does carry a certifying value.

Semester II (The Field Work Module)

The field work is assessed with regard to process and outcome, and with attention to individual and group results.

Table V. Oral presentation feedback form, ICHM 1992

Date: (Max. Score: 5 pts)	1	2	3	Participant: **Comments**
OVERALL IMPRESSION (2 pts) Appearance Enthusiasm Posture Expression Management Timing Listener involvement				Start: Finish:
STRUCTURE (1 point) Opening Examples/quotes Closing				
DELIVERY AND SKILLS (1 point) Voice: Speed Volume Natural movement Humour/Quotes Pauses				
VISUAL AIDS (1 point) Size of characters Type of characters Spelling				

Scale: 1 = Needs work, 2 = Good, 3 = Excellent

For process the following aspects are considered:
- group cohesiveness and cooperation;
- quality of individual contributions;
- appropriateness of time management;
- appropriateness of management of material and financial resources;
- appropriate consideration and use of human resources;
- cooperation with local counterparts;
- initiative in dealing with problems.

These aspects are reviewed by the field tutor with each participant. Formative feed-back is given at the end of the tutor's visit to the field. By that time, the staff have spent four weeks of preparatory work with the group in Rome and three full weeks at field level. A certifying assessment is carried out at the very end of the field work module ("final assessment by tutor") after six additional weeks of observation have elapsed. These assessments are not based on explicit criteria.

As far as outcome is concerned, two documents are examined: the study design and the final report (see criteria in Table VI). The papers are marked by two staff members who did not tutored any of the groups. For each criterion there is a scale of 5 points where 3 is the acceptable level of performance. The scores are then averaged to produce the final mark. This is the only occasion when a mark is given to the group as the documents have to be a product of the team.

Table VI. Assessment criteria for the outcome of field work

For the Study Design:

- clarity and coherence of goals and objectives;
- coherence and feasibility of planned activities;
- appropriateness of methods selected for data collection and analysis;
- quality of discussion of feasibility issues;
- quality of monitoring plan.

For the Final Report:

- relevance and clarity of executive summary;
- depth and coherence of the rationale for the study;
- achievement of objectives as stated in the study design;
- clarity of presentation of results;
- quality and coherence of interpretation;
- appropriateness, relevance and feasibility of the operational recommendations;
- completeness and correct reporting of references.

The final oral presentation

A formal oral presentation of the Final Report is given by each group member to a panel of assessors. Two external experts are asked to consider content areas for completeness (with respect to the written report), logical sequence of issues presented, and the ability to discuss specific issues in depth. These external assessors are professionals, usually from the WHO headquarters and international schools of public health. Presentation skills are assessed by an internal member of staff. Individual marks are assigned separately for content and presentation skills.

Evaluation of the Assessment System

A continuous evaluation of the course and its assessment system is undertaken by participants and staff during the year. At the end of each module evaluation questionnaires are filled in by the participants. The section related to assessment enquires "how appropriate were the instruments in testing the knowledge and/or skills contained in this module?". A separate response is required for each test, and suggestions for improvement are requested. The staff present the results in a plenary session for discussion and identification of corrective action.

Changes are adopted immediately or taken into account during planning for the next year. In 1992 the participants asked for an increase in opportunities for assessment of oral presentation. This request was implemented in the same year. An external adviser has been involved in the evaluation process since 1990 (Jolly, 1991, 1992).

Problems and Tentative Solutions

Balance between group and individual performance

This has probably been the major cause of discontent for the participants. It was felt that too much (quantitative) emphasis was given to the group assessment versus individual merit. The staff's intention was to engender a collaborative team spirit through the sharing of a group mark. An acceptable balance was probably found in 1992 when 80% of the total course score was assigned to individuals. Thus the responsibility for progression to the second semester rests specifically with the individual. A clearer identification of individual strengths and weaknesses also helps the staff in defining the composition of field-work teams.

The incentive to work as a group still plays a big part in the field module where the final report is assessed as group work (same mark for every member). In this case the level of individual contribution is also taken into consideration, as 50% of the total score for the module is linked to individual performance. The Tutor is in the best position to assess the group work performance of each team member through direct observation for three months. An individual assessment is also performed, as discussed above, by the external examiners and in the final oral presentation.

Pass/fail barriers

The introduction of this measure in 1990 was mainly in response to the difficulties experienced by field groups with one very weak or unmotivated member. A system is now in place for advance warning that a participant is at risk of not satisfying the barrier pass-mark. Facilitators are also informed, so that they can offer maximum support to that individual. If any participant fails to reach the pass-mark, all the staff meet to arrive at a decision that is not solely dependent on the mark. Even so, support for participants at risk should be strengthened and better structured.

Peer assessment

Peer assessment with a score among the participants (not meant for certifying purposes, but to monitor and generate progress) was abandoned after a few years. The process was not popular and the scores were meaningless (top value being preferred). At present the exercise takes the form of assessing the quality of group work. A checklist is used to identify problems to be discussed and for action to be taken. Some groups report that this activity helpless them to solve issues that prevent the team from functioning smoothly. However other participants are not sufficiently convinced of the merits of this exercise.

As far as acceptability of peer assessment is concerned, it is worthwhile to consider the unexpected benefit of the presentation skills exercise which provides useful opportunities for practising peer feed-back. The content and style of commenting on the performance of colleagues soon overlaps with the staff's feed-back. It could be that, in order to render peer feed-back acceptable to participants, they could start to practise it first on less sensitive issues, such as presentation skills, and in due course move on to review group dynamics. ICHM might give thought to such a strategy.

Assessment by the facilitator

The weight given to this part of PAS has been progressively increased by recognizing the special position of the facilitator in the group. The facilitator/field tutor can allocate 20% of the total score. Marks assigned by facilitators are discussed and finalised at a special staff meeting to control variance in the allocation of marks.

The in-progress status of PAS

The ICHM PAS has experienced changes and, to a lesser degree, will continue to be subject to adjustments and fine tuning. The fifth year saw a major change with the introduction of the closed book written tests in place of essays. For the year 1993 it is intended to use the same set of tests: much work will go into further developing the written test for Modules 1 and 2 by expanding the number of items from which participant can chose. The aim is to achieve a reasonable degree of stability in the PAS general approach and its components. This should help robust analysis, as more classes can be combined to reach statistically valid numbers. Staff will also gain confidence in administering tests which they have already used in previous years.

Conclusions

The ICHM PAS has been developed as an integral component of the course. The challenge is two-fold: on the one hand the system is trying to measure the degree of achievement of the learning objectives, on the other hand it is flexible enough to account for the differences in the educational paths of the participants. The emphasis on feed-back identifies the use of assessment as a learning opportunity. The main direction for the future is to maintain the present framework of assessment, while further developing existing tests. This should provide the base for conducting a better statistical evaluation of the instruments and tools in the system.

Acknowledgements

The author would like to acknowledge the contributions of previous and present ICHM staff and participants towards the construction and development of ICHM PAS. Particular thanks are due to Mr. B. Jolly, the ICHM external adviser for the assessment system, for his collaboration and for comments on this paper.

References

De Virgilio, G. (1993). Problem-based learning for training primary health care managers in developing countries. *Medical Education, 27,* 266-273.

De Virgilio, G., Guerra, R., Pinto, A., Frazzica, R.P., & Babille, M. (1994). Education in community settings: The fieldwork component in a problem-based curriculum for primary health care managers. *Annals of Community-Oriented Education, 7,* 203-210. Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

ICHM, (1992). Course Year Book, ICHM course material.

Jolly, B. (1991). *Report on the assessment system of the International Course for Primary Health Care Managers.* (Unpublished paper).

Jolly, B. (1992). *Final report of consultation on participant assessment system of the International Course for Primary Health Care Managers.* (Unpublished paper).

Annals of Community-Oriented Education
1994, Vol. 7, 419-474

FROM THE LITERATURE

Some Recent Books

Ethics

Feminist perspective in medical ethics. Holmes, H.B., & Purdy, L.B. (Eds.). (1992). Bloomington, United States of America: Indiana University Press.

Just doctoring: Medical ethics in the liberal state. Brennan, T.A. (1991). Berkley, California, United States of America: University of California Press.

Practical medical ethics. Seedhouse, D., & Lovett, L. (1992). Chichester, United Kingdom: John Wiley & Sons.

Learning, Teaching, Assessing

Clinical teaching in nursing. White, R., & Ewans, C. (1992). London, United Kingdom: Chapman and Hall.

Collaborative clinical education: The foundation of effective health care. Westburg, J., & Jason, H. (1992). New York, United States of America: Springer Publishing Co.

Educating the future G.P.: The course organizers handbook. McEvoy, P. (1993). Oxford, United Kingdom: Radcliffe Medical Press.

Examination for membership of the Royal College of General Practitioners (MRCGP): Development, current state and future trends. Lockie, C. (Ed.). (1990). London, United Kingdom: Royal College of General Practitioners.

How to dissect and understand medical terms. Anderson, D., & Baxton, R. (1992). London, United Kingdom: Royal Society of Medicine.

Increasing the relevance of education for health professionals. WHO Technical Report Series No. 838 (1993). Geneva, Switzerland: World Health Organization.

Learning to teach in higher education. Ramsden, P. (1992). London, United Kingdom: Routledge.

Looking into community pharmacy: Identifying effective communication skills in pharmacists-patient consultations. Hargie, O., Morrow, N., & Woodman, C. (1993). Belfast, United Kingdom: Queen's University Press.

Medical education. Lowry, S. (1993). London, United Kingdom: British Medical Journal.

Medical education on disability. Inman, C., & Kahtan, S. (1993). London, United Kingdom: University College Medical School.

Medicine, preserving the passion. Manning, P.R., & DeBakey, L. (1987). Heidelberg, Germany: Springer Verlag.

Medical undergraduate community-based teaching: A survey for the Association for the Study of Medical Education on current and proposed teaching in the community and in general practice in United Kingdom universities. McCrorie, P., Lefford, F., & Perrin, F. (1993). ASME Occasional Publication No.3. Dundee, United Kingdom: ASME/Ninewells Hospital and Medical School.

Mentoring and preceptorship: A guide to support roles in clinical practice. Morton-Cooper, A., & Palmer, A. (1993). Oxford, United Kingdom: Blackwell Scientific Publications.

Preparing materials for open, distance and flexible learning. Rowntree, D. (1993). London, United Kingdom: Kogan Page.

Problem-based learning as an educational strategy. Bouhuijs, P.A.J., Schmidt, H.G., & van Berkel, H.J.M. (Eds.). (1993). Maastricht, The Netherlands: Network of Community-Oriented Educational Institutions for Health Sciences.

Rating scales for vocational training in general practice. Centre for Primary Care Research, University of Manchester (1989). London, United Kingdom: Royal College of General Practitioners.

Teaching with audio in open and distance learning. Rowntree, D. (1993). London, United Kingdom: Kogan Page.

The human nature of learning: Selections from the work of M.L.J. Abercrombie. Nias, J. (Ed.). (1993). London, United Kingdom: SHRE/Open University Press.

Turning the tide: Safe Motherhood, a district action manual. Feuerstein, M.T. (1993). London, United Kingdom: Macmillan Press.

Using learning contracts in higher education. Stephenson, J., & Laycock, M. (Eds.). London, United Kingdom: Kogan Page.

53 Interesting ways to write open learning materials. Race, P. (1992). Bristol, United Kingdom: Technical and Educational Services.

Management, Practice, Research

ABC of AIDS. Adler, M.W. (1991). London, United Kingdom: British Medical Journal.

Changing primary care: The role of facilitators. Allsop, J. (1990). London, United Kingdom: King's Fund Centre for Health Service Development.

Clinical epidemiology: A basic science for clinical medicine. 2nd Edition Sackett, D.L., Haynes, R.B., Guyatt, G.H., &. Tugwell, P. (1991). Boston, Massachusetts, United States of America: Little, Brown & Co.

Clinical Guidelines: Report of a local initiative. Hains, A., & Hurwits, B. (1992). Occasional Paper No. 58. London, United Kingdom: Royal College of General Practitioners.

Doctors and their feelings: A pharmacology of medical caring. Mooz, B., Rabinowitz, S., Herz, M., & Katz, H.E. (1992). Westport, Connecticut, United States of America: Praeger Publishers.

Guidelines on HLM management: Country experiences in organizing and managing a national Health Learning Materials (HLM) project (1993). WHO/HRH/93.3 Geneva, Switzerland: World Health Organization.

Health workforce planning: A workbook and training guide. Dewdney, J., Wolfgramm, S., Rodgers, J., & Rotem, A. (1992). Kennington, Australia: W.H.O. Regional teacher Training Centre, University of New South Wales.

Managing change. Burnes, B. (1992). London, United Kingdom: Pitman.

Medical accidents. Vincent, C., Eunis, M., & Audley, R.J. (Eds.). (1993). Oxford, United Kingdom: Oxford University Press.

New world, new opportunities: Development in primary health care nursing. (1993). Leeds, United Kingdom: Health Care Directorate.

On being in charge (2nd Edition) McMahon, E., Barton, E., & Piot, M. (1992). Geneva, Switzerland: World Health Organization.

Partners for mental health: The contribution of professionals and non-professionals to mental health. (1994). WHO/MNH/MND/94.5. Geneva, Switzerland: World Health Organization.

Primary health care in the Arab world. Stephen, W.J. (1992). Wells, United Kingdom: Somerset.

Review of WHO's activities in the area of human resources policy analyses (HPA). Selby Smith, C. (1992). WHO/HRH/92.12. Geneva, Switzerland: World Health Organization.

Rural health care: Innovation in a changing environment. Straub, A., & Walzer, N. (1992). Westport, Connecticut, United States of America: Praeger Publishers.

The doctor, the patient and the group: Balint revisited. Balint, E., Courtny, M., Elder, A., Hull, S., & Juli, P. (1992). London, United Kingdom: Routledge.

Tools for primary care research. Stewart, M., Indiver, F., Bass, M.J., Dunn, E.V., & Norton, P.G. (Eds.). (1992). Newsbury Park, California, United States of America: Sage Publications.

Training manual on management of human resources for health. Section I - Conceptual basis, additional reading-annexes, exercises Part A, Part B; Section II - Facilitator's guide. (1993). WHO/Educ./93.201. Geneva, Switzerland: World Health Organization.

Some New Newsletters

AIM Bulletin. Action in International Medicine. c/o Royal Brompton National Heart and Lung Hospital, Sydney Street, London SW3 6NP, United Kingdom.

ASPIRE. International Newsletter of Advancement of Standardized Patients in Research & Education. The Morchand Center, Box 1127, One Gustave L. Levy Place, New York, N.Y. 10029-6574, United States of America.

Prince of Songkhla University Medical Education Newsletter. Division of Medical Education, Faculty of Medicine, Prince of Songkhla University, Hat Yai, Songkhla 90110, Thailand.

Some Recent Papers

With the generous consent of the Editors of Academic Medicine (formerly the Journal of Medical Education), Medical Education, Medical Teacher, and Teaching and Learning in Medicine we have reproduced the abstracts of a number of papers that may be of particular interest to readers of the Annals. Where it seemed of especial help to readers, who may not have easy access to comprehensive library facilities, we have added the references which were given at the end of a paper.

We have arranged the 56 abstracts under the following headings:
Assessment, Assessment-OSCE, Assessment with Standardized Patients, Communication Skills, Community-Based, Evaluation by Students, Ethics, Learning, Policy and Strategy, Problem-Based Learning, Selection for Admission, Stress and Teaching.

The addresses for ordering these journals are:
Academic Medicine: (formerly Journal of Medical Education): Association of American Medical Colleges, 2450 N Street, N.W., Washington, DC 20037, USA
Medical Education: Blackwell Publishing Co., P.O. Box 87, Osney Mead, Oxford, OX2 ODT, United Kingdom
Medical Teacher: Carfax Publishing Co., P.O. Box 24, Abington, OX14 2UE, United Kingdom
Teaching and Learning in Medicine: Lawrence Erlbaum Associates, 365 Broadway, Hillsdale, NJ 07642, USA.

Assessment

Beyond Multiple-Choice Questions and Essays: The Need for a New Way to Assess Clinical Competence. Elstein, A.S.(1993).
Academic Medicine, 68, 244-249.
This essay reviews the influence that research on psychological processes in clinical reasoning has had upon the characteristics and formats of licensing examinations such as the new United States Medical Licensing Examination (USMLE) and its predecessors, emphasizes the implications of such research for the assessment of clinical competence at all levels of medical education, and proposes a challenging new direction for educational research that could make clinical assessment more effective. Specifically, (1) factors are discussed that support the continued judicious use of multiple-choice questions (MQs); and (2) emphasis is given to the need to assess the clinician's ability to analyze controversial clinical situations, where no single answer is agreed upon as "most nearly correct", for even though essay questions and oral examinations are better suited than MQs to assess such questions, they have been replaced by MQs largely because of problems of consistency in grading, breadth of domain sampling, and cost. Because of these limits on essays and oral examinations, a program of educational research is advocated to develop

a test format that can effectively assess the clinician's abilities to deliberate among alternatives, to recognize the role of values and preferences in decisions, and to weigh risks and benefits. Just howmuch this new tool could be used for national certification and licensing examinations would have to be determined, but it is important that some component be included to signal to educators and new physicians that medical practice is, at least in part, concerned with matters for which final answers are not available.

References

United States Medical Licensing Examination: (1991) *Special bulletin*. Philadelphia: National Board of Medical Examiners.

Swanson, D.B., et al. (1991). *Phase 1 of the NBME comprehensive part* I *examination. Academic Medicine, 66*, 443-444.

Elstein, A.S., Shulman, L.S., & Sprafka, S.A. (1978). *Medical problem solving: An analysis of clinical reasoning*. Cambridge, MA: Harvard University Press.

Bordage, G., & Zacks, R. (1988). The structure of medical knowledge in the memories of medical students and general practitioners: Categories and prototypes. *Medical Education, 18*, 406-416.

Norman, G.R. (1988). Problem-solving skills, solving problems and problem-based learning. *Medical Education, 22*, 279-286.

Patel, V.L., Evans, D.A., & Groen, G.J. (1989). Biomedical knowledge and clinical reasoning. In: D.A. Evans, & V.L. Patel (Eds.). *Cognitive Science in Medicine*. Cambridge, MA: MIT Press.

Patel, V.L., & Groen, G.J. (1986). Knowledge-based solution strategies in medical reasoning. *Cognitive Science, 10*, 91-116.

Schmidt, H.G., Norman, G.R., & Boshuizen, H.P.A.L. (1990). A cognitive perspective on medical expertise: Theory and implications. *Academic Medicine, 65*, 611-621.

Lemieux, M., & Bordage, G. (1986). Structuralism and medical education: A comparative study of the cognitive strategies of novice physicians. *Sem. Inquest.,6*, 1-55.

Elstein, A.S., Shulman, L.S., & Sprafka, S.A. (1990). Medical problem solving: A ten-year retrospective. *Evaluation and the Health Professions, 13*, 3-36.

Kassirer, J.P., & Kopelman, R.I. (1991). *Learning clinical reasoning*. Baltimore, ML: Williams & Wilkins.

Elstein, A.S., et al. (1986). Comparison of physicians' decisions regarding estrogen replacement therapy for menopausal women and decisions derived from a decision analytic model. *American Journal of Medicine, 80*, 246258.

Gruppen, L.D., Wolf, F.M., Van Voorhees, C., & Stross, J.K. (1988). The influence of general and case-related experience on primary care treatment decision making. *Archives of Internal Medicine, 148*, 2657-2663.

Bell, D.E., Raiffa, H., & Tversky, A.,(Eds.) (1988). *Decision making: Descriptive, normative and prescriptive interactions*. New York, NY: Cambridge University Press.

Dowie, J., & Elstein, A.S., (1988). *Professional judgment: A reader in clinincal decision making*. New York, NY: Cambridge University Press.

Hammond, K.R., & Arkes, H.R. (1988). *Judgement and decision making: An* *interdisciplinary reader*. New York, NY: Cambridge University Press.

Bordage, G., & Page, G. (1987). An alternative approach to PMPs: The "key features" concept. In: I.R. Hart, & R.M. Harden (Eds.). *Further developments in assessing clinical competence*. Montreal, Canada: Can-Heal Publications.

Swanson, D.B., Norcini, J., & Grosso, L. (1987). Assessment of clinical competence: Written and computer-based simulations. *Assessment and Evaluation in Higher Education, 12,* 220-246.

Bordage, G., Grant, J., & Marsden, P. (1990). Quantitative Assessment of Diagnostic Ability. *Medical Education, 24,* 413-425.

Van der Vleuten, C.P.M., & Swanson, D.B. (1990). Assessment of clinical skills with standardized patients: State of the art. *Teaching and Learning in Medicine, 2,* 58-76.

Swanson, D.B. (1990). Issues in assessment of practical skills in medicine. *Professions in Educational Research Quarterly, 12,* no.2, 3-62.

Bakwin, H. (1945). Pseudodoxia Pediatrica. *New England Journal of Medicine, 232,* 691-697.

Eddy, D.M. (1990). Clinical decision making: From theory to practice: The challenge. *JAMA, 263,* 287-290.

Elstein, A.S. (1988). Cognitive processes in clinical inference and decision making. In: D.C. Turk, & P. Salovey (Eds.). *Inference and judgment in clinical psychology.* New York, NY: Free Press/Macmillan.

Wigton, R.S., Hoellerich, V.L., & Patil, K.D. (1986). How physicians use clinical information in diagnosing pulmonary embolism: An application of conjoint analysis. *Medical Decision Making, 6,* 2-11.

Eisenberg, J.M. (1986). *Doctors' decisions and the cost of medical care: The reasons for doctors' practice patterns and ways to change them.* Ann Arbor, MI: Health Administration Press.

Epstein, A.M., & McNeil, B.J. (1985). Physician characteristics and organizational factors influencing use of ambulatory tests. *Medical Decision Making, 5,* 401-415.

Wennberg, J., & Gittelsohn, A. (1973). Small area variations in health care delivery. *Science, 182,* 1102-1108.

Starr, P. (1982). *The social transformation of American medicine.* New York, NY: Basic Books.

Schön, D.A. (1988). From technical rationality to reflection-in-action. In: J. Dowie, & A.S. Elstein (Eds.). *Professional judgement: A reader in clinical decision making.* New York, NY: Cambridge University Press.

United States Medical Licensing Examination. (1991). Step I: General instructions, content outline, and sample items. Philadelphia, PE: Federation of State Medical Boards and National Board of Medical Examiners.

United States Medical Licensing Examination. (1991). Step II: General instructions, content outline, and sample items. Philadelphia, PE: Federation of State Medical Boards and National Board of Medical Examiners.

Norman, G.R. (1985). Objective measurement of clinical performance. *Medical Education,* *19*, 43-47.

Norcini, J.J., Shea, J.A:, & Day, S.C. (1990). The use of aggregate scoring for a recertifying examination. *Evaluation in Health Professions, 13*, 241-251.

Norcini, J.J., et al. (1990). The scoring and reproducibility of an essay test of clinical judgement. *Academic Medicine, 65*, S41-S42.

McGaghie, W.C. (1991). Professional competence evaluation. *Educational Research, 20*, no.1, 3-9.

Shulman, L.S. (1989). The paradox of teacher assessment. In: *New directions for teacher assessment: Proceedings of the 1988 ETC Invitational Conference*. Princeton, NJ: Educational Testing Service.

Muller, S. (1984). Physicians for the twenty-first century: Report of the project panel on the general professional education of the physician and college preparation for medicine. *Journal of Medical Education, 59*, part 2.

Evaluation of the Noncognitive Professional Traits of Medical Students. Phelan, S., Obenshain, S.S., & Galey, W.R. (1993).
Academic Medicine, 68, 799-803.

Background. Professional attributes such as honesty, integrity, and reliability are critical to success in medical school and post-graduate practice, yet such noncognitive attributes have traditionally been poorly evaluated. Method. A program of evaluating students' noncognitive professional attributes at the University of New Mexico School of Medicine was reviewed over a four-year period, from 1987-88 through 1990-91, involving the approximately 525 students enrolled at the school at that time. The evaluation program enabled faculty and staff to quantify their impressions of problem students in a uniform manner, by using an evaluation form that listed and described seven basic professional traits. Results. Over the study years the program identified ten students with difficulties in the basic science and clinical years regarding their character and professionalism. For these ten students, interventions ranged from nothing being done, in one case, to such significant remediations are recommendations of extensive counseling and a leave of absence. One student was dismissed on the basis of poor academic performance, and the other nine have graduated. In some cases, students noticeably improved their professional behaviors, but whether their behaviors changed as a result of the interventions can't be determined. Conclusion. By identifying and tracking students with difficulties, the program offers the opportunity for intervention and, ideally, remediation. This program can complement systems that evaluate academic performance. Such a program can help an institution assure not only the cognitive competence of its graduates, but the competence of their professional behaviors as well.

References

Gibson, J. (1982). Dentist, lawyers, and values: Suggestions for professional reapproachment. *Dental Clin. North America, 26*, 229-243.

Herman, M.W., Veloski, J.J., & Hojat, M. (1983). Validity and importance of low ratings given medical graduates in noncognitive areas. *Journal of Medical Education, 58*, 837843.

Tonesk, X., & Buchanan, R.G. (1989). An AAMC pilot study by 10 medical schools of clinical evaluation of students. *Journal of Medical Education, 62*, 707-718.

Irby, D.M., Fantel, J.I., Milan, S.D., & Schwartz, M.R. (1981-1982). Faculty rights and responsibilities in evaluating and dismissing medical students. *Journal of College and University Law, 8*, 102-119.

Gordon, M.J. (1978). Assessment of student affect: A clinical approach. In: D.M. Irby, & M.K. Morgan (Eds.). *Evaluating clinical competence in health professions*. St. Louis, Missouri: C.V. Mosby.

Irby, D.M., & Milan, S. (1989). The legal context for evaluating and dismissing medical students and residents. *Academic Medicine, 64*, 639-643.

The Triple-Jump Examination as an Assessment Tool in the Problem-Based Medical Curriculum at the University of Hawaii. Smith, R.M. (1993).
Academic Medicine, 68, 366-372.

Background. The three-step triple jump (TJ) examination aims to assess students' clinical problem-solving processes predominantly by means of subjective assessments administered by faculty. But training TJ administrators to ensure interrater reliability is both time- and cost-intensive, and difficult at best - hence the desire to test a more objective system of scoring students' TJ performances. Method. The sample was the 58 first-year students of the class of 1995, who in March 1992 were finishing the second 13-week unit in the problem-based curriculum at the University of Hawaii John A. Burns School of Medicine. To determine how well the school had succeeded in standardizing and objectifying its TJ examination (used for all unit's in the first two years), scores were correlated for various objective examinations independent of the TJ administrators' subjective assessments, and the TJ objective assessments (regarding number of problem-based hypotheses generated and number of hypothesis-testing clinical data base items elicited).

The statistical methods used were linear regression, Student's unpaired t-test, chi-square, and the z-test. Results. The TJ scores and independent objective examinations did not correlate significantly (suggesting that they assess different aspects of student achievement), but the TJ subjective and objective scores did correlate significantly. There were large standard deviations on the TJ objective scores, largely because one problem was significantly more difficult than the others (each student works on only one of several problems). However, the administrators' subjective scores for all problems were comparable. Conclusion. Because problems vary in difficulty, objective scores cannot be used across problems as a major component of all students' grades; but when a student has received an unsatisfactory score, an external reviewer can evaluate the appropriateness of the subjective score by comparing the student's objective performance with those of students who had the same problem and received higher subjective scores. That the administrators' subjective assessments for all problems were comparable not only suggests that the administrators were able to adjust for problem variability but also reinforces the appropriateness of using subjective assessments for the TJ examination.

References

Barrows, H.S. (1983). Problem-based, self-directed learning. *JAMA, 250*, 3077-3080.

Anderson, A.S. (1991). Conversion to problem-based learning in 15 months. In: D. Boud, & G. Feletti (Eds.). *The challenge of problem-based learning*. London, England: Kogan Page Ltd.

McDermott Jr., J.F., & Anderson, A.S. (1991). Retraining faculty for the problem-based curriculum at the university of Hawaii, 1989-1991. *Academic Medicine, 66*, 778-779.

Painvin, C., Neufeld, V., Norman, G., Walker, I., & Whelan, G. (1979). The "triple jump" exercise - a structured measure of problem-solving and self-directed learning. In: D.L. Jones, compiler. *Proceedings of the Eighteenth Annual Conference on Research in Medical Education*. Washington, DC: Association of American Medical Colleges.

Powles, A.C.P., et al. (1981). The "triple jump" exercise - further studies of an evaluative technique. In: K.G. Fritz, compiler. *Proceedings of the Twentieth Annual Conference on Research in Medical Education*. Washington, DC: Association of American Medical Colleges.

Barrows, H.S., & Bennett, H. (1972). The diagnostic problem-solving skill of the neurologist. *Archives of Neurology, 62*, 273-277.

Gale, J. (1982). Clinical problem solving: The beginning of the process. *Medical Education, 16*, 22-26.

Kassirer, J.P. (1983). Teaching clinical medicine by iterative hypothesis testing. *New England Journal of Medicine, 309*, 921-923.

Pallie, W., & Carr, D.H. (1987). The McMaster medical education philosophy in theory, practice and historical perspective. *Medical Teacher, 9*, 59-68.

Feletti, G.I., Saunders, A., Smith, A.J., & Engel, C.E. (1984). Assessment of independent learning. *Medical Teacher, 6*, 70-73.

Mehrens, W.A. (1992). Using performance assessment for accountability purposes. *Educational Measure*, 11, 3-9.

Downie, N.M., & Health, R.W. (1983). *Basic statistical methods*. 5th ed. New York, NY: Harper and Row.

Swanson, D.B., Case, S.M., & van der Vleuten, C.P.M. (1991). Strategies for student assessment. In: D. Boud and G. Feletti (Eds.). *The challenge of problem-based learning*. London, England: Kogan Page Ltd.

Evaluating Clinical Skills in an Undergraduate Medical Education Curriculum.

Scott, C.S., Irby, D.M., Gilliland, B.C., & Hunt, D.D. (1993).

Teaching and Learning in Medicine, 5, 49-53.

The University of Washington School of Medicine conducted a series of internal surveys to investigate senior students' capabilities with respect to clinical skills and behaviors. The surveys examined faculty opinion regarding essential clinical skills and sought their estimates of potential problem areas. They also identified those clinical skills and behaviors on which students reported whether they had ever been expected to demonstrate proficiency. Three questions were addressed: (a) What behaviors and skills should all undergraduate medical students in this institution be expected to demonstrate before graduation? (b) Do senior medical students at this institution appear to be learning skills that faculty believe are essential? (c) How should skills that are considered essential by the institution's faculty be evaluated? This approach to institutional self-study is presented as a model for determining how a medical school that does not have a comprehensive performance-based evaluation system can determine whether there is a consensus that one may be needed. Results of the process and reactions of the faculty to the conclusions are discussed.

Effects of Examiner Training on Open-Ended, Higher Taxonomic Level Questioning in Oral Certification Examinations. Des Marchais, J.E., & Jean, P. (1993).
Teaching and Learning in Medicine, 5, 24-28.
In general, clinical oral examinations are intended to measure problem-solving ability of candidates in complex situations. However, some examiners tend to ask closed-ended questions of lower taxonomic level. Over a 5-year period, on four different certification examinations in orthopedic surgery of the Royal College of Physicians and Surgeons of Canada, a total of 42 examiners were observed and their skills at asking open-ended questions of higher taxonomic level assessed. In order to improve the taxonomic level of questions, groups of examiners were given a 3-hr training session before the examination, which resulted in a twofold increase in the number of open-ended questions of problem-solving level. In another examination, trained examiners asked one third more open-ended questions and 50% more questions of problem-solving level than did untrained examiners. In the last examination, the difference in performance between examiners trained years before and that of untrained examiners was less important, although still significant. Thus, relatively short training of examiners in the art of asking open-ended questions of problem-solving level seems to improve the taxonomic quality of oral certification examination in orthopedic surgery.

References

Abrahamson, S. (1983). The oral examination: The case for and the case against. In: J.S. Lloyd, & D.G. Langsley (Eds.). *Evaluating the skills of medical specialists.* Chicago: American Board of Medical Specialties.

McGuire, C.H. (1966). The oral examination as a measure of professional competence. *Journal of Medical Education, 41,* 267-74.

Evans, L.R., Ingersoll, R.W., & Smith, E.J. (1966). The reliability, validity and taxonomic structure of oral examination. *Journal of Medical Education, 41,* 651.

Levine, H.G., & McGuire, C.H. (1970). The validity and reliability of oral examinations in assessing cognitive skills in medicine. *Journal of Educational Measurement, 7(2),* 63-73.

Des Marchais, J.E., Ferland, J.J., & Robillard, E. (1981). Etude de validité d'un examen de certification [Validation study of a certification examination]. *Union Médicale du Canada, 110,* 499-503.

Des Marchais, J.E., & Rivard, C.H. (1985). Analyse des niveaux taxonomiques des

questions de l'examen oral de certification en chirurgie orthopédique [Study of taxonomic level of questions in an orthopedic surgery certification oral examination]. *Annals of the Royal College of Physicians and Surgeons of Canada, 18,* 232-234.

Des Marchais, J.E., Jean, P., & Delorme, P. (1989). Training in the art of asking questions at oral examinations. *Annals of The Royal College of Physicians and Surgeons of Canada, 22,* 213-216.

McGuire, C.H. (1981). Center for educational development, University of Illinois Medical School. In: J.J. Guilbert (Ed.). *Educational handbook for health personnel* (WHO Offset Publication No.35). Geneva, Switzerland: World Health Organization.

Bloom, B.S. (1956). *Taxonomy of educational objectives; Handbook 1. Cognitive domain.* New York NY: McKay.

Foley, R.P., & Smilansky, I. (1980). *Teaching techniques, a handbook for health professionals.* New York, NY: McGraw-Hill.

Des Marchais, J.E., Jean, P., & Castonguay, G.H. (1990). Training psychiatrists and family doctors in evaluating interpersonal skills. *Medical Education, 24,* 376-381.

Bird, J., & Lindley, P. (1979). Interviewing skill: The effect of ultra brief training for general practitioners: A preliminary report. *Medical Education, 13,* 349-355.

Newble, D.I., Hoare, J., & Sheldrake, P.F. (1980). The selection and training of examiners for clinical examinations. *Medical Education, 14,* 345-349.

Leichner, P., Sisler, G.C., & Harper, D. (1984). A study of the reliability of the clinical oral examination in psychiatry. *Canadian Journal of Psychiatry, 29,* 394-397.

Neufeld, V.R., & Norman, G.R. (1985). *Assessing clinical competence.* New York, NY: Springer.

Des Marchais, J.E., Jean, P., & Delorme, P. (1990). Basic training program in medical pedagogy: A 1-year program for medical faculty. *Canadian Medical Association Journal, 142,* 734-740.

The Oral Examination: A Study of Academic and Non-Academic Factors. Thomas, C.S., Mellsop, G., Callender, K., Crawshaw, J., Ellis, P.M., Hall, A., MacDonald, J., Silfverskiold, P., & Romans-Clarkson, S. (1992).
Medical Education, 27, 433-439.

The oral examination in psychiatry for final-year medical students at Wellington and Dunedin School of Medicine, University of Otago, was studied. Between December 1989 and April 1990, 40 medical students were video-recorded during such an examination. The transcripts of the recording of each oral, and at a later date the video-recordings, were individually scored by a panel of six research psychiatrists who were experienced examiners. In addition verbal and non-verbal behaviour was rated using visual analogue scales and the students completed personality and anxiety questionnaires. There was a low level of agreement between research psychiatrists in the allocation of oral marks. The oral score was positively associated with the level of confidence of the student and negatively with anxiety in men.

Clinical Evaluation: Physiotherapists' Ranking of Competencies. Sanford, J., Stratford, P., & Solomon, P. (1993).
Medical Teacher, 15, 369-377.
The competencies to be assessed as part of the process of clinical evaluation of students need to be determined. This paper describes a method establishing the emphasis or weights assigned to each area of competency. Clinicians and clinical educators were asked to rate a number of dummy student evaluation forms and the individual competencies on each form. Category weights were derived and the magnitude of these weights were used to rank the categories. The derived ranks were compared to the rater's over ranking of the categories. The weightings are compared to those reported in other studies which examine the value placed on clinical competencies by clinicians.

The Structured Oral Self-Directed Learning Evaluation: One Method of Evaluating the Clinical Reasoning Skills of Occupational Therapy and Physiotherapy Students. Chapman, J.A., Westmorland, M.G., Norman, G.R., Durrell, K., & Hall, A. (1993).
Medical Teacher, 15, 223-236.
The Structured Oral Self-directed Learning Examination (SOSLE) is used to evaluate the clinical reasoning skills of occupational therapy (OT) and physiotherapy (PT) students. It is an oral examination which evaluates a students' problem-solving ability, self-directed learning skills, knowledge level and self-assessment ability. The three parts of the examination are conducted over a 24-hour period. Validation of this instrument was carried out in two groups of OT and PT undergraduate students over two consecutive years (Year 1-n = 20) (Year 2-n = 18). Inter-rater reliability correlations varied from 0.61 to 0.78 the first year to 0.85 to 0.99 in the second year. The results obtained from the SOSLE were also compared to written and tutorial marks obtained in the same course. Pearson Correlation Coefficients (PCC) among mean SOSLE and two written paper scores ranged from 0.0-0.05 (Year 1) to 0.0-0.1 (Year 2). The PCC among the mean SOSLE and tutorial performance scores were 0.57 (Year 1) and 0.0 (Year 2). The results show that good agreement between raters can be reached using this evaluation method. However, the poor correlations between the SOSLE and the other methods of evaluation may show that different skills are being evaluated. Further validity testing needs to be carried out to confirm that this tool is measuring process oriented skills.

Assessment - OSCE

Guidelines for Estimating the Real Cost of an Objective Structured Clinical Examination. Reznick, R.K., Smee, S., Baumber, J.S., Cohen, R., Rothman, A., Blackmore, D., & Bérard, M. (1993).
Academic Medicine, 68, 513-517.
A major impediment to the use of the objective structured clinical examination (OSCE) is that it is a labor-intensive and costly form of assessment. The cost of an OSCE is highly dependent on the particular model used, the extent to which hidden costs are reported, and

the purpose of the examination. The authors detail hypothetical costs of running a four-hour OSCE for 120 medical students at one medical school. Costs are reported for four phases of this process: development, production, administration, and post-examination reporting and analysis. Costs are reported at two ends of the spectrum: the high end, where it is assumed that little is paid for by the institution and that faculty receive honoraria for work put into the examination; and the low end, where it is assumed that the sponsoring institution defrays basic costs and that faculty do not receive honoraria for their participation. The total costs reported for a first-time examination were $104,400 and $59,460 (Canadian dollars) at the high and low ends, respectively. These translate to per-student costs of $870 and $496. The cost of running an OSCE is high. However, the OSCE is uniquely capable of assessing many fundamental clinical skills that are presently not being assessed in a rigorous way in most medical schools.

Station-length Requirements for Reliable Performance-Based Examination Scores.
Shatzer, J.H., Darosa, D., Colliver, J.A., & Barkmeier, L. (1993).
Academic Medicine, 68, 224-229.
Purpose. To directly compare the generalizability of medical students' performance scores under systematically varied station times in two surgery end-of-clerkship performance-based examinations. Method. The participants were 36 third-year students randomly assigned to the first two rotations of the core surgery clerkship during 1991-92 at Southern Illinois University School of Medicine. The students rotated through a 12-station examination that employed standardized patients (SPs). In the first rotation, the student took six five-minute stations and six ten-minute stations. In the second rotation, the time lengths were reversed for the same stations. The students' total scores were based on (1) subscores on checklists that were completed by the SPs and (2) subscores on the students' written responses to short questions about each station (these responses were provided at station couplets that were five minutes long, regardless of station length). Generalizability coefficients were computed from the pooled rotation results to provide reliabilities for scores from the two station lengths. Results. Generalizability decreased in the ten-minute stations, mostly attributable to less variability among students' performances. The checklist subscores accounted for most of this variability, while couplet subscores remained stable between station lengths. Conclusion. The longer station length actually decreased the generalizability of the scores by decreasing the variability among students' performances; thus, allocating different times to stations can affect the score reliability, as well as impact on the overall testing time, of performance-based examinations.

Administration of a Parallel, Simultaneous Objective Structured Clinical Examination to Accommodate a Large Class of Students. Carpenter, J.L., McIntire, D., Battles, J., & Wagner, J.M. (1993).
Teaching and Learning in Medicine, 5, 79-85.
The use of an objective structured clinical examination (OSCE) to evaluate the clinical abilities of second-year medical students at the end of an introduction to clinical medicine

course in 2 successive years is reported. Due to the large number of students in our classes, two identical, simultaneous, parallel OSCEs were administered each year. Skills to be evaluated and cases used to measure these skills were determined by a modification of existing methods. The logistic feasibility of administering a large OSCE in this manner was confirmed. A thorough psychometric evaluation of the OSCE was performed, and findings were evaluated. When used in a pass-fail context and calculated as a dependability index with cutoffs, the generalizability of the total OSCE and most individual skills measured was greater than .8 when the cutoff was 2 SD below the mean score. The number of cases required to achieve a generalizability of .8 for the total OSCE and each individual skill was fewer than 11. The potential for use of the OSCE in making pass-fail decisions in medical school classes and proposals for modification of the mechanisms of administration and scoring of the OSCE are discussed.

The Use of Objective Structured Clinical Examination (OSCE) for Detecting and Correcting Teaching-Learning Errors in Physical Examination. Sethuraman, K.R. Pondicherry, India. (1993).
Medical Teacher, 15, 365-368.
The innovative use of Objective Structured Clinical Examination (OSCE) to detect and correct teaching-learning (T-L) errors in clinical skills is described. The group performance errors could be classified as Type I (faulty performance or omission of a step), Type II (failure to recognize or correctly interpret a clinical sign) or combined (Type I & II) errors. Type I errors were due to ineffective or absent T-L experiences. Type II errors were due to poor concept attainment or inability to discriminate between the differences in a clinical sign. Clinical demonstration during feedback was effective in eliminating Type I errors. Correcting Type II errors of the group needed more time and effort and was only partially effective.

Assessment with Standardized Patients

An Overview of the Uses of Standardized Patients for Teaching and Evaluating Clinical Skills. Barrows, H.S (1993).
Academic Medicine, 68, 443-451.
The author defines the term standardized patient (SP), the umbrella term for both a simulated patient (a well person trained to simulate a patient's illness in a standardized way) and an actual patient (who is trained to present his or her own illness in a standardized way). He first discusses the many values of simulated patients over actual patients as teaching and assessment tools in the classroom and refutes a few myths about the use of SPs. Then he recounts the origin and development of SPs over a three-decade period, beginning with his work as a neurologist at the Los Angeles County Hospital, where he trained a model from the art department to simulate a neurological patient and assist in the assessment of clinical clerks. He then describes additional roles of SPs that have developed, including (1) their use in the Clinical Practice Examination created at Southern

Illinois University School of Medicine and (2) the major use that has come into being over the last 10 - 15 years: facilitating the comprehensive assessment of clinical competence using multiple stations in examinations such as the objective structured clinical examination. He concludes with information about recent and current work on SPs, who are becoming more and more accepted in the assessment process, and urges skeptics not to make judgments about the value of SPs until they have experienced the technique first hand and reviewed the literature concerning the extensive and often high-quality research about this assessment tool.

Effects of Examinee Gender, Standardized-Patient Gender, and Their Interaction on Standardized Patients' Ratings of Examinees' Interpersonal and Communication Skills. Colliver, J.A., Nu Viet Vu, Marcy, M.L., Travis, T.A., & Robbs, R.S. (1993).
Academic Medicine, 68, 153-157.
Purpose. To assess the effects of examinee gender, standardized-patient (SP) gender, and, in particular, their interaction on ratings made by SPs of examinees' interpersonal and communication skills in a performance-based examination of clinical competence. Method. The examination was administered to four classes of senior medical students (about 70 per class) at Southern Illinois University School of Medicine, 1988-1991. The skill dimensions tested were clarity of communication, thoroughness of explanation, professional manner, personal manner, and overall patient satisfaction. Split-plot analyses of variance were used. Results. There was no interaction of examinee gender and SP gender for any of the five rating scales. There was no main effect of examinee gender for four of the five scales; however, for personal manner, women students were rated slightly higher than men students. There was a main effect of SP gender, but the effect was not consistent from rating scale to rating scale or from class to class. Nevertheless, differences in ratings given by men and women SPs should not be of psychometric concern, since the ratings of men and women examinees are necessarily affected alike. Conclusions. Except for the women examinee's higher performance in personal manner, the men and women examinees generally performed equally well with respect to interpersonal and communication skills, and they performed equally well regardless of the gender of the SP.

Communication Skills

Behavioural Assessment of the Effectiveness of a Communication Programme for Medical Students. Evans, B.J., Sweet, B., & Coman, G.J. (1993).
Medical Education, 27, 344-350.
This study evaluated the effectiveness of a communication programme taught to medical students at the University of Melbourne in their preclinical years. The effectiveness of the programme was assessed by comparing video taped history-taking interviews completed by a cohort of first-year clinical students in 1986, who had not undertaken the communication programme, with a similar cohort of first-year clinical students in 1992 who had undertaken the programme. The students from the 1986 cohort who had not undertaken

communication training in their preclinical course completed their video taped interviews as part of the experimental evaluation of a consulting skills training programme carried out in 1986-87. A comparison of ratings given by two experimentally naive, independent observers revealed that the 1992 student cohort demonstrated some significantly better skills at questioning and facilitating communication with patients. By contrast, the 1986 student cohort showed significantly greater skills at maintaining relevance in their interviews and greater capacity to explore patients' psychosocial concerns. These data suggest that students acquire the most effective interview skills when interacting with patients during their clinical training.

Workshop for Consultants on the Teaching of Clinical Communication Skills. Bird, J., Hall, A., Maguire, P., & Heavy, A. (1993).
Medical Education, 27, 181-185.
A group of senior medical school staff concerned about the short-lived effects of communication training formed the Medical Interview Teaching Association. They felt that communication training needed to be reinforced throughout the curriculum and that this would need active involvement by large numbers of consultants. To achieve this they planned a series of workshops. Seventeen consultants and eight other senior staff agreed to participate in the pilot workshop. This was a 3-day residential workshop. The structure was adapted from a 'faculty development' model used successfully in the USA. Participants worked mostly in small groups helped by experienced facilitators. The teaching style was learner centred and therefore the details of the problem-based agenda and the choice of working methods were largely determined by the participants themselves. There were also some conventional lectures and demonstrations. Evaluation was by postal questionnaire 2 weeks later. This requested both qualitative comments and Likert scale ratings about every aspect of process and outcome. Most responses were strongly positive. Participants felt they made good progress in developing new skills and new curriculum ideas. They also felt more motivated and self-aware as teachers. The learner-centred approach and the diversity of learning activities were seen as very useful. The unstructured approach to self-awareness training was felt to be less useful. It is concluded that such workshops could well lead to more effective communication training and may also have wider implications for medical education.

Personal Journal Writing in a Communication Skills Course for First-year Medical Students. Ashbury, J.E., Fletcher, B.M., & Birtwhistle, R.V. (1993).
Medical Education, 27, 196-204.
Student journals are used at all levels of education to facilitate academic and personal learning. This paper describes the experience of journal writing from both a student and teacher perspective, in a communication skills course for first-year medical students at Queen's University, Kingston, Ontario, Canada. As one of the requirements of the course, students described their individual reactions to each weekly session in a journal. Teachers responded to each journal entry. Guidelines for journal usage in this course are described.

The content of the journals includes topic-related information, comments concerning the student's individual experience of the course, and personal thoughts related to life experiences and becoming a doctor. A summary of evaluations of journal writing by teachers and students is presented. We have observed that journal writing facilitates a personal and reflective perspective to the first-year medical curriculum for both students and teachers. Journal writing appears to initiate and encourage self-awareness by providing a safe place for students to describe their experiences and relationships and to question their own values and beliefs. In the journal, through a mutual sharing of thoughts and feelings, barriers between students and teachers are diminished, leading to enhanced rapport and communication.

References

Birtwhistle, R.V., & Burley, H.J. (1992). *A communication skills course for first-year medical students.* (Personal correspondence).

Carswell, R.J.B. (1988). Journals in a graduate curriculum course. *English Quarterly, 21,* 104-114.

Fox, R. (1982). The personal log: enriching clinical practice. *Clinical Social Work Journal, 10,* 94-102.

Fulwiler, T. (1986). The argument for writing across the curriculum. In: A. Young, & T. Fulwiler (Eds.). *Writing across the disciplines: Research into practice.* Upper Montclair, NJ: Boynton/Cook Publishers.

Fulwiler, T. (Ed.). (1987). *The Journal Book.* Portsmouth, New Hampshire: Boynton/Cook Publishers.

Fulwiler, T. (1992). The personal connection: Journal writing across the curriculum. In: T. Fulwiler, & A. Young (Eds.). *Language connections: Writing and reading across the curriculum.* Urbana, Illinois: National Council of Teachers of English.

Hahnemann, B.K. (1986). Journal writing: A key to promoting critical thinking in nursing students. *Journal of Nursing Education, 25,* 213-215.

Hallberg, F. (1987). Journal writing as person making. In: T. Fulwiler (Ed.). The Journal Book. Portsmouth, New Hampshire: Boyton/Cook Publishers.

Hasekura, H., Fukushimia, H., & Hiraide, K. (1990). Evaluation of lectures on medical ethics through students' drawings. *Medical Education, 24,* 42-45.

Hettich, P. (1976). The journal: An autobiographical approach to learning. *Teaching of Psychology, 3,* 60-63.

Hettich, P. (1980). The journal revisited. *Teaching of Psychology, 7,* 105-106.

Hettich, P. (1990). Journal writing: Old fare or nouvelle cuisine. *Teaching of Psychology, 17,* 36-39.

Kent, G.G. (1991). Medical students' reactions to a nursing attachment scheme. *Medical Education, 25,* 23-31.

Longhurst, M.F. (1989). Physician self-awareness: The neglected insight. In: M. Stewart, & D. Roter (Eds.). *Communicating with Medical Patients.* Newbury Park, California: Sage Publications.

Novack, D.H., Volk, G., Drossmann, D.A., & Lipkin, M. (1993). *Medical interviewing* *and interpersonal skills teaching in U.S. medical schools: Progress, problems and promise.* (in press).

Simpson, M., Buckman, R., Stewart, M., Maguire, P., Lipkin, M., Novack, D., & Till, J. (1991). Doctor-patient communication: The Toronto consensus statement. *British Medical Journal, 303,* 1385-1387.

Swenson, C.R. (1988). The professional log: Techniques for self-directed learning. Social Casework: *The Journal of Contemporary Social Work, 69,* 307-311.

Walker, M. (1989). Analysing qualitative data: Ethnography and the evaluation of medical education. *Medical Education, 23,* 498-503.

Wolf, M.A. (1989a). Affective training for human service providers. *Lifelong Learning, 12,* 18-20.

Wolf, M.A. (1989b). Journal writing: A means to an end in educating students to work with older adults. *Gerontology and Geriatrics Education, 10,* 53-62.

A Communication Skills Course for Preclinical Students: Evaluation of General Practice Based Teaching Using Group Methods. Kendrick, T., & Freeling, P. (1993). *Medical Education, 27,* 211-217.

Teaching preclinical medical students about doctor-patient communication gives them an opportunity to develop their interviewing skills prior to their having to elicit lists of symptoms in their clinical years. General practitioners should be among the more efficient interviewers in clinical medicine and therefore able to make important contributions to the teaching of interviewing skills. This paper describes the aims, objectives and methods of the preclinical communications skills course at St. George's Hospital Medical School. The contribution of the Division of General Practice and Primary Care to the teaching of interviewing skills in the preclinical course has been evaluated using rapid group methods. Students were asked to identify examples of specific interviewing behaviours in video taped general practice consultations, and to judge whether the behaviours were helpful or unhelpful in eliciting relevant information from the patient. Students who had been given experience in interviewing patients in small groups led by general practitioners identified significantly more helpful and unhelpful interviewing behaviours in the taped consultations than students who had not received the small-group teaching. Students rated the teaching as relevant and effective in terms of giving insights into the interviewing skills they needed to develop. Group methods of evaluation such as these might prove useful to other medical schools with class sizes of 150 students or more.

Subjective and Behavioural Evaluation of the Teaching of Patient Interview Skills. Usherwood, T. (1993).
Medical Education, 27, 41-47.

One aim of the course in general practice and public health medicine during the final year at the University of Sheffield is to help students to develop further their interpersonal communication skills with particular reference to their skills in interviewing patients. During the course students meet twice in small groups with a tutor, in order to review audiotape recordings of interviews with patients seen during their general practice attachments. The main activity during these tutorials is group discussion of the interviewer's behavioural options at significant points during the interview. Students also listen individually with a tutor to an interview that they have recorded, discuss this interview and assess it against a set of explicit criteria as part of their summative course assessment. In response to an anonymous end-of-course questionnaire, 85% of students felt that their interview skills had been improved by the teaching and 68% that listening to their own recordings had been the most helpful aspect. During interviews with simulated patients recorded at the end of the course, students asked more open questions, fewer questions referring to physical symptoms, more questions referring to feelings, beliefs or behaviour and fewer questions of a check-list type than during interviews recorded at the start. A number of students also requested examples of specific events during the end-of-course interviews although none had done so at the beginning of the course. All of these changes were statistically significant and were in directions that were consistent with the teaching in the small-group tutorials.

References

Boud, D., Keogh, R., & Walker, D. (1985). *Reflection: Turning Experience into Learning.* London, England: Kogan Page.

Fox, N.J., & Dryden, C. (1991). Medical education and the GCSE generation - a transferable activity-skills programme in medical sociology. *Medical Teacher, 13,* 185-192.

Frankel, R., & Beckman, H. (1989). Evaluating the patient's primary problem(s). In: M. Stewarts, & D. Roter (Eds.). *Communicating with Medical Patients.* London, England: Sage.

Gask, L., Boardman, J., & Standart, S. (1991). Teaching communication skills: A problem based approach. *Postgraduate Education for General Practice, 2,* 7-15.

Gask, L., Goldberg, D., Lesser, A.L., & Millar, T. (1988). Improving the psychiatric skills of the general practice trainee: An evaluation of a group training course. *Medical Education, 22,* 132-138.

Gask, L., McGrath, G., Goldberg, D., & Millar, T. (1987). Improving the psychiatric skills of established general practitioners: Evaluation of group teaching.
Medical Education, 21, 362-368.

Gask, L., Usherwood, T., & Standart, S. (1992). Training teachers how to teach communication skills: A problem based approach. *Postgraduate Education for General Practice, 3,* 92-99.

General Medical Council. (1980). Recommendations on Basic Medical Education. London, England: General Medical Council.

Joesbury, H.E., Bax, N.D.S., & Hannay, D.R. (1990). Communication skills and clinical methods: A new introductory course. *Medical Education, 24,* 433-437.

Lesser, A.L. (1981). The psychiatrist and family medicine: A different training approach. *Medical Education, 15,* 398-406.

Lesser, A.L. (1985). Problem-based interviewing in general practice: A model. *Medical*

Education, 19, 299-304.

Levenstein, J. H., McCracken, E.C., McWhinney, I.R., Stewart, M.A., & Brown, J.B. (1986). The patient-centred clinical method. 1. A model for the doctor-patient interaction in family medicine. *Family Practice, 3,* 24-30.

Linfors, E.W., & Neelon, F.A. (1981). Interrogation and interview: Strategies for obtaining clinical data. *Journal of the Royal College of General Practitioners, 31,* 426-428.

Lublin, J.R. (1992). Role modelling: A case study in general practice. *Medical Education, 26,* 116-122.

Macguire, P., Roe, P., Goldberg, D., Jones, S., Hyde C., & O'Dowd, T. (1978). The value of feedback in teaching interviewing skills to medical students. *Psychological Medicine, 8,* 695-704.

Norusis, M.J. (1988). *SPSS/PC + V2.0 Base manual for the IBM/XT/AT and PS/2.* SPSS Inc. Chicago.

Sanson-Fisher, R., & Macguire, P. (1980). Should skills in communicating with patients be taught in medical schools? *Lancet, ii,* 523-526.

Simpson, M., Buckman, R., Stewart, M., Maguire, P., Lipkin, N., Novack, D., & Till, J. (1991). Doctor-patient communication: The Toronto consensus statement. *British Medical Journal, 303,* 1385-1387.

Usherwood, T.P. (1990). Responses to illness - implications for the clinician. *Journal of The Royal Society of Medicine, 84,* 205-207.

Usherwood, T., Joesbury, H., & Hannay, D. (1991). Student-directed problem-based learning in general practice and public health medicine. *Medical Education, 25,* 421-429.

Whitehouse, C.R. (1991). The teaching of communication skills in United Kingdom medical schools. *Medical Education, 25,* 311-318.

Williams, M. (1987). *Training in counselling and human relations.* School of Education, University of Nottingham.

Evaluating Empathy in Interviewing: Comparing Self-Report With Actual Behavior.

Tamburrino, M.B., Lynch, D.J., Nagel, R., & Mangen, M. (1993).

Teaching and Learning in Medicine, 5, 217-220.

The purpose of this study was to compare responses on the Medical Helping Relationship Inventory (MHRI), an instrument recently developed for evaluation of medical communications skills, with ratings of medical students' video taped interview behavior. Fifty videotapes of student interviews were evaluated by two trained raters, using the Carkhuff Empathic Understanding Scale, an adapted version of the Arizona Clinical Interview Rating scale, and additional items developed to measure specific interviewing behavior. Measures of empathy based on rated behavior were highly intercorrelated; however, expected positive relations between rated empathy and the MHRI Understanding subscale were not found. It would appear that preferences for understanding responses on the MHRI multiple-choice survey did not reflect the ratings of the students' actual interview behavior.

Community-Based

How Ambulatory Care is Different: A Paradigm for Teaching and Practice. Stearns, J.A., & Glasser, M. (1993).
Medical Education, 27, 35-40.
This paper reviews the issues regarding an increased emphasis on medical education and practice in the ambulatory care setting. A paradigm for ambulatory medicine is offered which combines the elements of traditional medical care and teaching with the more 'distinctive' elements representative of the ambulatory setting. The former includes aetiology, history, physical examination, laboratory tests and therapy; while the latter includes continuity, context, health education, economics and responsibility. The paradigm is illustrated in relation to the problem of hypertension. The ambulatory medicine paradigm is further discussed with respect to potential barriers to its acceptance. These include: (1) the assumption that 'traditional' medical education does teach all 10 elements of the paradigm; (2) the axiom that if one learns to care for the sickest patients, the less ill ones should be manageable; (3) the intuitive aspects of the 'art' of practising ambulatory medicine; (4) the recognition that this teaching will require a longitudinal experience; and (5) perception that the five distinctive elements are not 'hard' science and objectively measurable. Nevertheless, the changing face of medical practice requires the adoption of an ambulatory medicine paradigm in medical education.

Perspectives on Ambulatory Programs: Barriers and Implementation Strategies. Krackov, S.K., Birskovich, L., Packman, C.H., Seward, S.J., Regan-Smith, M.G., & Baker, S.D. (1993).
Teaching and Learning in Medicine, 5, 243-250.
In this article, we share strategies used at several institutions to address common issues in establishing ambulatory experiences. The issues are grouped under three major headings: institutional/policy issues (institutional resistance, financing, faculty incentives), administrative/implementation issues (sites, patients, and space; recruiting faculty; recruiting/placing students), and curricular/academic issues (planning the experience, faculty development, program evaluation). First we review the rationale for ambulatory experiences and then briefly describe the programs involved. Next, for each topic area, we outline specific issues and strategies found useful at our institutions, including a variety of perspectives that should help readers find approaches that may be especially useful in their own environment.

Practice-Based Education for Medical Students: The Doctor's Office as Classroom. Packman, C.H., & Krackov, S.K. (1993).
Teaching and Learning in Medicine, 5, 193-196.
The University of Rochester School of Medicine and Dentistry has developed the Practice-Based Experience (PBE) program in which third-year students spend the entire second half of the 12-week Medicine Clerkship in the offices of practising internists. This program

began in 1989-1990 and has now concluded its fourth full year of operation. An extensive evaluation component has convinced the course organizers that medical student education in physicians' offices is feasible, academically effective, and acceptable to students and faculty. This article describes the design and implementation of PBE.

Evaluation by Students

Consensus Evaluation: A Method of Student Evaluation Yielding a High Retrieval Rate and Ranking Scores. Russell, M.L., & Rothman, A.I. (1993).
Teaching and Learning in Medicine, 5, 133-137
A method of student evaluation of preclerkship clinical teaching in medicine and surgery courses is described, which results in a high return rate from students and which yields data on both individual teacher effectiveness and the delivery of course content. This instrument has been found stable in use over 3 years, with an overall retrieval rate of 85 %. Numerical scales of individual teacher performance and of course content coverage have been developed, which allow ranking, comparison, and tracking of teacher performance over time. These have proved useful in evaluating faculty for promotion purposes and in identifying problems in curriculum delivery. Both faculty and students have perceived the system as fair and reliable.

Student Perceptions of Tutor Effectiveness in a Problem-Based Surgery Clerkship. Mayo, P., Donnelly, M.B., Nash, P.P., & Schwartz, R.W. (1993).
Teaching and Learning in Medicine, 5, 227-233.
This study identified the characteristics of effective tutors in a problem-based learning (PBL) educational setting. Forty-four junior medical students participated in two 6-week PBL groups and evaluated their tutors based on a list of 12 characteristics.
Statistical analyses of the students' responses revealed that faculty members differed significantly in their possession of tutor skills, in the way they carried out the tutor skills, and in their performance of group-management skills. Tutors were rated highest on participation in the sessions, enthusiasm, and level of comfort outside their area of expertise. They were rated lowest on providing feedback to the group and promoting psychosocial issues.
The results indicate that students are highly satisfied with overall tutor performance despite significant differences among tutors. Two important characteristics of the effective tutor were identified: (a) helping students identify important issues and (b) providing feedback to students while encouraging feedback from the group.

Hospital-Based versus Community-Based Clinical Education: Comparing Performances and Course Evaluations by Students in Their Second-Year Pediatrics Rotation. Satran. L., Harris, I.B., Allen, S., Anderson, D.C., Poland, G.A., & Miller, W.L. (1993).
Academic Medicine, 68, 380-382.

Background. Increasing use of outpatient settings for clinical education raises the question of their effectiveness compared with that of inpatient settings. Method. At the University of Minnesota Medical School - Minneapolis in 1987-88, the 190 second-year students participated in a six-week tutorial rotation introducing them to clinical pediatrics: 52 (27%) were in hospital settings and 138 (73%) were in community outpatient settings. Almost all the students (178) evaluated their rotations by responding to both structured and open-ended questions, using a Likert scale for the structured questions. At the completion of the second year, all 190 students took an objective structured clinical examination (OSCE) that included five pediatrics stations. Student's t-test was used to compare (1) the mean ratings the hospital-based and community-based students gave their pediatrics rotations and (2) the mean scores earned by the two groups of students on the five pediatrics stations in the OSCE. Results. There were no statistically significant differences between (1) the two groups' mean ratings of the clinical experience overall or of the quality of teaching or (2) the groups' mean scores on any of the OSCE stations. Conclusion. That the hospital-based and community-based students performed comparably on the OSCE and gave similar evaluations of their pediatrics rotations supports the use of community practitioners to provide students with their initial clinical training. Moreover, community-based teaching sites replicate situations in which most students will eventually practice medicine.

Ethics

Teaching Medical Ethics to First-Year Students by Using Film Discussion to Develop Their Moral Reasoning. Self, D.J., Baldwin, D.C., & Olivarez, M. (1993).
Academic Medicine, 68, 383-385.
Purpose. To evaluate a project on teaching medical ethics to first-year students by using film discussion to develop the students' moral reasoning. Method. The participants were 114 first-year students at Texas A&M University Health Science Center College of Medicine in 1989-90, 1990-91, and 1991-92: (1) 48 (20 women and 28 men) who participated during the fall quarter in an elective course on social issues in medicine, which consisted of weekly one-hour discussions of short films; (2) 37 (18 women and 19 men) who participated in the course during both the fall and winter quarters; and (3) a control group of 29 (8 women and 21 men) who did not take the course and so had no exposure to the film discussions. The influence of the discussions on the students' moral reasoning was measured by using Rest's Defining Issues Test for pre-tests and post-tests. The scores of the three groups were compared by using multivariate analysis of variance. Results. There were statistically significant increases in the moral reasoning scores of both the course registrants with one-quarter exposure to the film discussions (p<.002) and those with two-quarter exposure (p<.008) compared with the scores of the students who did not take the course and had no exposure (p<.109). Conclusion. No doubt there was a self-selecting bias on the part of the course registrants; however, since both groups of registrants showed significant increases on their post-test scores, clearly the course did have a positive influence on these students' moral reasoning. Thus, it is possible to develop young

people's moral reasoning in medical school as well as in earlier educational environments.

Advanced Training in Biomedical Ethics: A Curriculum in Clinical Specialty Programmes. Jennett, P.A., Crelinsten, G.L., & Kinsella, T.D. (1993).
Medical Education, 27, 484-488.
Medical ethics play an essential role in the practice of medicine, in the care of individual patients, in the allocation of health care resources, and in the formulation of health care policy. A specific body of knowledge, 'biomedical ethics', has developed which applies ethical theory to biomedical practice. This has provided doctors with tools systematically to integrate rational ethical analysis into clinical decision-making. Training in the discipline of biomedical ethics is now required for all doctors in Canada. The goals, content areas, learning objectives, and learning methods considered appropriate for advanced training in this field for medical specialists are provided in this paper. Six topic areas are discussed: introduction to ethical theory, clinical ethics, professional ethics, ethics of human experimentation, ethics of health policy, and independent study. Ways this curriculum could be organized and evaluated are also offered.

Ethics in a Short White Coat: The Ethical Dilemmas that Medical Students Confront. Christakis, D.A., & Feudtner, C. (1993).
Academic Medicine, 68, 249-254.
Many existing ethics curricula fail to address the subtle yet critical ethical issues that medical students confront daily. The authors report on the kinds of dilemmas students face as clinical clerks, using cases that students submitted in 1991-92 during an innovative and well-received ethics class given at a tertiary care hospital as part of the internal medicine clerkship. Analysis of these cases reveals that many dilemmas are intimately tied to the student's unique role in the medical health care team. Recurring themes included the student's pursuit of experience, differing degrees of knowledge and ignorance among team members, and dealing with disagreement within the hierarchical authority structure of the medical team. The authors conclude that some components of ethical education must be participant-driven and developmentally stage-specific, focusing more attention on the kinds of ethical decisions made by medical students as opposed to those made by residents or practicing physicians.

Learning

Learning by Mutual Commitment: Broadening the Concept of Learning Contracts. Mårtenson, D., & Schwab, P. (1993).
Medical Teacher, 15, 11-15.
A learning environment where students may negotiate - with the course directors on the objectives and contents of a course, and where the teachers from pre-stated teaching and pedagogical obligations may also negotiate with the students on what realistic demands they can meet when adjusting to individual students' needs, could be regarded as a set-up

where learning by mutual commitment takes place. In order to support and to elaborate on reported experiences from using contracts as a learning device (Solomon, 1992), experiences gained from the Medical SchooL of Witten/Herdecke, Germany will be presented.

Using Experiential Training to Enhance Health Professionals' Awareness of Patient Compliance Issues. Morse, E.V., Simon, P.M., & Balson, P.M. (1993).
Academic Medicine, 68, 693-697.
Purpose. To educate health care practitioners about medication compliance by having them play the role of patients who have been placed on a medication regimen. Methods. In 1988, ten physicians and ten nurses working in the Acquired Immune Deficiency Syndrome Clinical Trials Unit of Tulane University and Louisiana State University participated in a compliance protocol designed to enable them to better understand the experience of their patients, who were involved in a three-year controlled trial of azidothymidine (zidovudine) for asymptomatic persons infected with the human immunodeficiency virus. Over the three-year trial, the patients were expected to take three pills five times a day at four-hour intervals every day. To gain experiential understanding of this prolonged, intensive medication regimen, the physicians and nurses agreed to follow their patients' pill-taking schedule by using placebos for seven days, and they kept diaries of their reactions to the seven-day- experience. Two years later a follow-up assessment was done to ascertain the participants' opinions about whether the seven-day experience had had a lasting, positive influence on the way they addressed compliance issues with patients. Results. The primary barriers to medication compliance recorded by the participants were time-related difficulties in following such a strict, unvarying schedule (e.g., frustration at having to repeat the pill-taking five times a day at regular intervals). Other frequently recorded difficulties were social barriers to public pill-taking (e.g., being stigmatized as ill or different). The follow-up results indicated that the participants felt that the seven-day experience was a relatively fast, painless, and helpful means of educating themselves about the problems their patients face. Conclusion. By playing the role of patients, the physicians and nurses learned to recognize sources of patient noncompliance with medication regimens, and, as the follow-up indicated, they were able to generalize the role-playing experiences to later interactions with patients.

Introducing Physiotherapy Students to the Idea of 'Reflective Practice'. Cross, V. (1993).
Medical Teacher, 15. 293-301.
Absence of precise definitions of such terms as 'reflection' and 'reflective practice' may result in reluctance to explore methods of introducing the underlying ideas to students. In this paper some views on meaning are considered and reflection is introduced to a group of physiotherapy students as a tool in active learning. Transcripts of the students' reflections during a pre-clinical and a clinical experiential learning exercise are presented and discussed.

The Moral Development of Medical Students: A Pilot Study of the Possible Influence of Medical Education. Self, D.J., Schrader, D.E., Baldwin, D.C., & Wolinsky, F.D. (1993).
Medical Education, 27, 26-34.

Medicine endorses a code of ethics and encourages a high moral character among doctors. This study examines the influence of medical education on the moral reasoning and development of medical students. Kohlberg's Moral Judgment Interview was given to a sample of 20 medical students (41.7% of students in that class). The students were tested at the beginning and at the end of their medical course to determine whether their moral reasoning scores had increased to the same extent as other people who extend their formal education. It was found that normally expected increases in moral reasoning scores did not occur over the 4 years of medical education for these students, suggesting that their educational experience somehow inhibited their moral reasoning ability rather than facilitating it. With a range of moral reasoning scores between 315 and 482, the finding of a mean increase from first year to fourth year of 18.5 points was not statistically significant at the $P< 0.05$ level. statistical analysis revealed no significant correlations at the $P< 0.05$ level between the moral reasoning scores and age, gender, Medical College Admission Test scores, or grade point average scores. Along with a brief description of Kohlberg's cognitive moral development theory, some interpretations and explanations are given for the findings of the study.

References

Baldwin, Jr., D.C., Daugherty, S.F., & Self, D.J. (1991). Changes in moral reasoning during medical school. A*cademic Medicine* (September Supplement), *66,* 1-3.

Benor, D.E., Notzer, N., Sheehan, T.J, & Norman, G.R. (1984). Moral reasoning as a criterion for admission to medical school. *Medical Education, 18,* 423-428.

Blasi, A. (1980). Bridging moral cognition and moral action: A critical review of the literature. *Physiological Bulletin, 88,* 1-45.

Blatt, M., & Kohlberg, L. (1975). The effects of classroom moral discussion upon children's level of moral judgment. *Journal of Moral Education, 4,* 129-161.

Blum, L. (1988). Gilligan and Kohlberg: Implications for moral theory. *Ethics, 98,* 472-491.

Bulger, R.J. (1989). *In search of the modern Hippocrates.* Iowa City, Iowa: University of Iowa Press.

Burns, C.R. (1977). *Legacies in Ethics and Medicine.* New York, NW: Science History Publications.

Christie, R., & Merton, R. (1958). Procedures for the study of the values climate of medical schools. *Journal of Medical Education, 33,* 125-153.

Colby, A., & Kohlberg, K. (1987a). *The measurement of moral judgement: Vol. I, Theoretical foundations and research validation.* New York, NY: Cambridge University Press.

Colby, A., & Kohlberg, K. (1987b). *The measurement of moral judgement: Vol. II, Standard issues scoring manual.* New York, NY: Cambridge University Press.

Eron, L. (1955). The effects of medical education on medical students. Journal of *Medical Education, 10,* 559-566.

Flexner, A. (1910). Medical Education in the United Sates and Canada: A report to the Carnegie Foundation for the Advancement of Teaching. *Bulletin No.4.* Boston, Massachusetts: Updyke.

Galaz-Fontes, J.F., Pacheco-Sanchez, M.E., Sierra-Morales, I., Commons, M.L., Gutheil, T.G., & Hauser, M.J. (1989). *Medical school training and moral reasoning in Mexico.* Paper presented at the Fourth Adult Development Symposium Meeting, Cambridge, MA.

Gibbs, J.C., & Widaman, K.F. (1982). *Social intelligence: Measuring the development of sociomoral reflection.* Englewood Cliffs, New Jersey: Prentice-Hall.

Gilligan, C. (1977). In a different voice: Women's conceptions of self and of morality. Harvard Educational Review, 47, 481-517.

Gilligan, C., & Attanucci, J. (1988). *Two moral orientations: Gender differences and similarities.* Merrill-Palmer Quarterly, 33, 223-237.

Gilligan, C. (1982). In a different voice: Psychological theory and women's development. Cambridge, MA: Harvard University Press.

Gillon, R. (1979). Commentary. *Journal of Medical Ethics, 5,* 180-181.

Goldman, S.A., & Arbuthnot, J. (1979). Teaching medical ethics: The cognitive-developmental approach. *Journal of Medical Ethics, 5,* 170-180.

Kant, I. (1956). *Critique of practical reason.* Trans. L. Beck. Indianapolis: Bobbs-Merrill. (Originally published 1788.)

Kant, I. (1959). Foundations of the metaphysics of morals. Trans. L. Beck. Indianapolis: Bobbs-Merrill. (Originally published 1785.)

Kohlberg, L. (1969). Stage and sequence: The cognitive-developmental approach to socialization. In: D. Goslin (Ed.). *Handbook of socialization theory and research.* Chicago, Illinois: Rand McNally.

Kohlberg, L. (1976). Moral stages and moralization: The cognitive developmental approach. In: T. Lickona (Ed.). *Moral development and behavior: Theory, research and social issues.* New York, NW: Holt, Rinehart, & Winston.

Kohlberg, L. (1981). *Essays on moral development: Vol. I, The philosophy of moral development.* San Francisco, CA: Harper & Row, Publishers.

Kohlberg, L. (1981). *Essays on moral development: Vol. II, The psychology of moral development.* San Francisco, CA: Harper & Row, Publishers.

Noddings, N. (1984). *Caring: A feminine approach to ethics and moral education.* Los Angeles, CA: University of California.

Pellegrino, E.J., & Thomasma, D.C. (1981). *A philosophical basis of medical practice.* New York, NY: Oxford University Press.

Rawls, J. (1971). *A theory of justice.* Cambridge, MA: Harvard University Press.

Reed, T.M. (1987). Developmental moral theory. *Ethics, 97,* 441-456.

Reiser, S.J., Jyck, A.J., & Curram, W.J. (1977). *Ethics in medicine: Historical perspectives and contemporary concerns.* Cambridge, MA: The Massachusetts Institute of

Technology.

Rest, J.R., Davidson, M., & Robbins, S. (1978). Age trends in judging moral issues: A review of cross-sectional, longitudinal, and sequential studies of the defining issues test. *Child Development, 49*, 263-279.

Rest, J.R, (1979). *Development in judging moral issues.* Minneapolis, Minnesota: University of Minnesota Press.

Rest, J.R. (1986). *Moral development: Advances in research and theory.* New York, NY: Praeger.

Rest, J.R. (1988). Can ethics be taught in professional schools? The psychological research. *Ethics: Easier Said than Done, 1*, 22-26.

Self, D.J., Baldwin, Jr., J.C., & Hurrey, M.0. (1992a). Description and evaluation of the use of film discussion for teaching medical humanities. *Academic Medicine* (in press).

Self, D.J., Wolinsky, F.D., & Baldwin, Jr., D.C. (1989). The effect of teaching medical ethics on medical students' moral reasoning. *Academic Medicine, 64*, 755-759.

Sheehan, T.J., Husted, S.D., & Candee, D. (1981). *The development of moral judgement over three years in a group of medical students.* Paper presented at the American Educational Research Association meeting, Los Angeles, CA.

Snarey, J.R. (1985). Cross-cultural university of social-moral development: A critical review of Kohlbergian research. *Psychological Bulletin, 97*, 202-232.

Zabrenko, R.N., & Zabarenko, L.M. (1978). *The doctor tree: Developmental stages in the growth of physicians.* Pittsburgh, PE: University of Pittsburgh Press.

Policy and Strategy

Beyond "Health Care Reform". Heyssel, R.M. (1993).
Academic Medicine, 68, 178-182.

The author discusses the need to make corrections in the U.S. health care system, describes the simplistic and money-oriented definition that many persons have of "health care reform," and discusses the issues he thinks will and will not be dealt with in the coming reforms of the health care system. He maintains that true reform would deal with matters such as restraining expansion of the health care industry, setting reasonable fees, and confronting the harmful social and environmental conditions that result in high "medical" care costs and poor health statistics. The medical profession - including academic medical centers - has a large role to play in true health care reform, which will involve facing the major barriers (which he outlines) that are now impeding important reforms (e.g., increasing the number of generalist physicians; finding better ways to pay for medical students' and residents' education). The profession cannot make progress in true reform without developing a vision of what the U.S. health care system should be and becoming active in moving toward that vision, acting in the interests of both the individual patient and the community as a whole. The author outlines some of the barriers to finding that vision (such as the influence of third-party payers on the doctor - patient relationship and the fragmentation of medicine and medical education by specialties and subspecialties) and proposes the characteristics and values of the kind of medical education and community involvement of academic medical centers that can help create the needed vision, regain the trust of the public, and thereby reform health care in the interests of both the community and the profession.

Teaching Medicine for the 1990s. Morrison, R.E., Miller, S.T., & Kang, A.H. (1993).
Teaching and Learning in Medicine, 5, 62-65.
Dynamic circumstances have produced dramatic changes in the requirements of medical education in the 1990s. The present system has failed to keep pace with these changes and is viewed by society as one of the leading causes of high health care costs. It is imperative that academic medical centers assume a leadership role in providing the solutions to the problems in medical education and health care reform if they are to provide for their own long-term stability.

The Medical School Curriculum Committee Revisited. Hendricson, W.D., Payer, A.F., Rogers, L.P., & Markus, J.F. (1993).
Academic Medicine, 68, 183-189.
Numerous study commissions have contended that departmental territoriality and lack of coordinated planning are stagnating contemporary medical education. As a cure, these commissions have recommended the creation of centralized academic management units empowered to oversee revitalization of the curriculum through a series of reforms, including better definition of graduation competencies, community-based training, interdisciplinary courses, problem-based learning, and modernization of evaluation strategies. To determine the extent to which these recommendations were being adopted, in 1990 the authors sent a questionnaire on curriculum committee functions, current innovation efforts, and future priorities to academic administrators and members of medical school curriculum committees at 143 North American medical schools. Responses were received from administrators (primarily associate deans for academic affairs) at 118 schools and committee members (primarily faculty) at 111 schools. Recommendations for enhancing curriculum committee effectiveness were also elicited. The authors conclude that centralization of curricular management has occurred at very few institutions, and that the commonly mentioned reforms are being adopted at a modest pace. The results are analyzed in light of theories of the institutional change process and strategies for introducing educational innovations into established institutions.

AAMC Policy on the Generalist Physician. (1992).
Academic Medicine, 68, 1-6.
In 1992 the Association of American Medical Colleges created the Generalist Physician Task Force to develop a policy statement for the AAMC and to recommend ways to help reverse the trend away from generalism. The task force strongly endorsed using private-sector initiatives exerted through consensus and voluntary cooperation, although recognizing the indispensable role of government in defining the magnitude of the need for generalist

physicians and in eliminating barriers to meeting the need. As a policy, the AAMC advocates an overall national goal that a majority of graduating medical students be committed to generalist careers (family medicine, general internal medicine, or general pediatrics) and that appropriate efforts be made by all schools so that this goal can be reached within the shortest possible time. To further this goal, the task force recommended strategies for the AAMC, schools of medicine, graduate medical education, and the practice environment.

An Approach to Training and Retaining Primary Care Physicians in Rural Appalachia. Roberts, A., Foster, R., Dennis, M., Davis, L., Wells, J., Bodemuller, M.F., & Bailey, C.A. (1993).
Academic Medicine, 68, 122-125.
The West Virginia School of Osteopathic Medicine (WVSOM) educated and retained more primary care physicians for practice in rural Appalachia than did any other U.S. medical school from 1978 through 1990. This article describes the most important methods used at WVSOM to place physicians in rural areas: (1) The school has a focused, achievable mission (to provide primary care physicians who are trained to meet the medical needs of rural Appalachia and to improve the health care of the rural Appalachian population) that is agreed upon by the administration, faculty, and students; (2) it participates in a multistate educational exchange program with a similar mission; (3) it emphasizes personalized and interactive recruiting, admission, and placement processes aimed to attract nontraditional rural students; (4) it provides early and long-term clinical training in rural sites (both hospitals and physicians' offices); (5) it is dedicated primarily to the education of medical students rather than to research or other goals; and (6) it is a freestanding school in a rural environment. The authors state that although WVSOM is unusual in some respects, at least some of its methods may be useful to other medical schools as they seek to produce more primary care physicians for rural and other underserved areas.

"Academic" CME and the Social Contract. Davis, D., & Parboosingh, J. (1993).
Academic Medicine, 68, 329-332.
The term academic continuing medical education (CME) is defined and explored from the perspective of forces that have made its usage necessary. These forces include the new understanding of the place, impact, and scope of CME, and, in particular, the increasing entrepreneurial interests in the field, unrelated to the improvement of physicians' competence or performance, or to health care outcomes. In addition to principles of CME provision promulgated by the Accreditation Council of CME, and those of ethical CME providers, academic CME implies the critical appraisal of the providers' activities, the creation of new knowledge about how physicians learn and change, and the dissemination of information based on such knowledge. Finally, the nature of academic CME providers is discussed, and the potential role of CME in fostering the social contract between the medical professional and society is explored.

Problem-Based Learning

Foundations of Problem-Based Learning: Some Explanatory Notes. Schmidt, H.G. (1993).

Medical Education, 27, 422-432.

The present article elaborates on cognitive effects of problem-based learning put forward by Schmidt, De Volder, De Grave, Moust & Patel (1989) and Norman & Schmidt (1992). Its purpose is to discuss, in some detail, the theoretical premises of this approach to learning and instruction. It is argued that problem-based learning, above all, promotes the activation of prior knowledge and its elaboration. Evidence is reviewed demonstrating that these processes actually occur in small-group tutorials and that the processing of new information is indeed facilitated by discussion of a relevant problem. These effects must be attributed to a reorganization taking place in the knowledge structures of students as a result of problem-oriented study. In addition, a cognitive process called epistemic curiosity (or intrinsic interest) is enabled. Some directions for further research are outlined. The contribution starts, however, with a discussion of the philosophical and pedagogical roots of problem-based learning.

References

Anderson, J.R., & Reder, L.M. (1979). An elaborative processing explanation of depth of processing. In: L.S. Cermak, & F.I.M. Craik (Eds.). *Levels of Processing in Human Memory.* Hillsdale, New Jersey: Lawrence Erlbaum.

Ausubel, D.P. (1968). *Educational psychology, a cognitive view.* New York, NY: Holt, Rinehart and Winston.

Barrows, H.S. (1984). A specific, problem-based, self-directed learning method designed to teach medical problem-solving skills, self-learning skills enhance knowledge retention and recall. In: H.G. Schmidt, & M.L. de Volder (Eds.). *Tutorials in problem-based learning.* Assen, The Netherlands: Van Gorcum.

Barrows, H.S., & Tamblyn, R.M. (1980). *Problem-based learning.* New York, NY: Springer.

Blumberg, Ph., & Michael, J.A. (1992). Development of self-directed learning behaviors in a partially teacher-directed problem-based curriculum. *Teaching and Learning in Medicine, 4,* 3-8.

Bransford, J.D., & Johnson, M.K. (1972). Contextual prerequisites for understanding: Some investigations of comprehension and recall. *Journal of Verbal Learning and Verbal Behavior, 11,* 717-726.

Bruner, J.S. (1971). *Toward a theory of instruction.* Cambridge, MA: Harvard University Press.

Bruner, J.S. (1989). Learning and thinking. *Harvard Educational Review, 29,* 184-192.

Caramazza, A., McCloskey, M., & Green, B. (1981). Naive beliefs in "sophisticated" subjects: Misconceptions about trajectories of objects. *Cognition, 98,* 117-123.

Champagne, A.B., Gunstone, R.F., & Klopfer, L.E. (1983). Naive knowledge and science learning. *Research in Science and Technological Education, 2,* 173-187.

De Grave, W.S., Schmidt, H.G., Beliën, J.J., Moust, J.H.C., De Volder, M.L., & Kerkhofs, L.M.M. (1984). *Effecten van verschillende typen van activatie van voorkennis op recall, gemeten met een aanvultoets. [Effects of different types of activation of prior knowledge on recall, measured with a completion procedure].* Paper presented at the Onderwijs Research Dagen, Tilburg.

De Volder, M.L., Schmidt, H.G., De Grave, W.S., & Moust, J.H.C. (1989). Motivation and achievement in cooperative learning: The role of prior knowledge. In: J.H.C. van der Berchen, & F. Halisch (Eds.). *Achievement and task motivation.* Berwyn: Swets North America.

De Volder, M.L., Schmidt, H.G., Moust, J.H.C., & De Grave, W.S. (1986). Problem-based-learning and intrinsic motivation. In: J.H.C. van der Berchen, Th.C.M. van der Berchen, & E.E.I. de Bruyn (Eds.). *Achievement and task motivation.* Berwyn, North America.

Dewey, J. (1929). *The quest for certainty.* New York, NY: Minton.

Dolmans, D.H.J.M., Gijselaers, W.H., & Schmidt, H.G. (1992). *Do students learn what their teachers intend they learn? Guiding processes in problem-based learning.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco.

Fraser, C.E. (1931). *The case method of instruction.* New York, NY: McGraw-Hill.

Godden, D.R., & Baddeley, A.D. (1975). Context-dependent memory in two natural environments: On land and underwater. *British Journal of Psychology, 66,* 325-331.

Haugeland, J. (1985). *Artificial intelligence: The very idea.* Cambridge, MA: The MIT Press.

Hilgard, E.R., & Bower, G.H. (1975). *Theories of learning.* Englewood Cliffs, New Jersey: Prentice Hall.

Johnson, D.W., & Johnson, R.T. (1979). Conflict in the classroom: Controversy and learning. *Review of Educational Research, 49,* 51-69.

Kokx, I.P.A., & Schmidt, H.G. (1990). *The quality of problems in problem-based learning: Expert judgements.* Paper presented at the Second International Symposium on Problem-Based Learning, Yogyakarta, Indonesia.

Lowry, N., & Johnson, D.W. (1981). Effects of controversy on epistemic curiosity, achievement and attitudes. *Journal of Social Psychology, 115,* 31-43.

Moore, G.T. (1991). The effect of compulsory participation of medical students in problem-based learning. *Medical Education, 25,* 140-143.

Moust, J.H.C., & Schmidt, H.G. (1992). *Undergraduate students as tutors: Are they as effective as faculty in conducting small-group tutorials?* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco.

Moust, J.H.C., Schmidt, H.G., De Volder, M.L., Beliën, J.J.J., & De Grave, W.S. (1986). Effects of verbal participation in small-group discussion on learning. In: T.E. Richardson, M.E. Eysenck, & D.W. Piper (Eds.). *Student learning: Research in education and cognitive psychology.* Guildford: Society for Research into Higher Education.

Neisser, U. (1967). *Cognitive Psychology.* New York, NY: Appleton-Century-Crofts.

Nooman, Z., Schmidt H.G., & Ezzat E. (Eds.). (1990). *Innovation in medical education, an evaluation of its present status.* New York, NY: Springer Publishing.

Norman, G.T., & Schmidt H.G. (1992). The psychological basis of problem-based learning: A review of the evidence. *Academic Medicine, 67,* 557-565.

Patel, V.L., & Groen, G.J. (1986). Knowledge based solution strategies in medical reasoning. *Cognitive Science, 10,* 91-116.

Piaget, J. (1954). *The construction of reality in the child.* New York, BY: Basic Books.

Popper, K.R. (1959), *The logic of scientific discovery.* London, England: Hutchinson.

Schmidt, H.G. (1983a). Problem-based learning: Rationale and description. *Medical Education, 17,* 11-16.

Schmidt, H.G. (1983b). *Intrinsieke motivatie en studieprestatie: Enkele verkennende onderzoekingen. [Intrinsic motivation and achievement: Some investigations].* Pedagogische Studiën, 60, 385-395.

Schmidt, H.G. (1984). Activatie van voorkennis en tekstverwerking. [Activation of prior knowledge and text processing.] *Nederlands Tijdschrift voor de Psychologie, 39,* 335-347.

Schmidt, H.G., & Boshuizen H.P.A. (1993). On the origin of intermediate effects in clinical case recall. *Memory and Cognition, 21,* 338-351.

Schmidt, H.G., De Volder, M.L., De Grave, W.S., Moust, J.H.C., & Patel V.L. (1989). Explanatory models in the processing of science text: The role of prior knowledge activation through small-group discussion. *Journal of Educational Psychology, 81,* 610619.

Schmidt, H., Spaaij, G., & De Grave, W. (1988). Opsporen van misconcepties bij middelbare scholieren. [Detecting high school students' misconceptions.] *Tijdschrift voor Onderwijsresearch, 13,* 129-140.

Spaulding, W.B. (1991). *Revitalizing Medical Education: McMaster Medical School, the early years 1965-1974.* Hamilton, Ontario: Decker.

Problem-based Learning: A Review of Literature on its Outcomes and Implementation Issues. Albanese, M.A., & Mitchell, S. (1993).
Academic Medicine, 68, 52-81.
The effects of problem-based learning (PBL) were examined by conducting a meta-analysis—type review of the English-language international literature from 1972 to 1992. Compared with conventional instruction, PBL, as suggested by the findings, is more nurturing and enjoyable; PBL graduates perform as well, and sometimes better, on clinical examinations and faculty evaluations; and they are more likely to enter family medicine. Further, faculty tend to enjoy teaching using PBL. However, PBL students in a few instances scored lower on basic sciences examinations and viewed themselves as less well prepared in the basic sciences than were their conventional trained counterparts. PBL graduates tended to engage in backward reasoning rather than the forward reasoning experts engage in, and there appeared to be gaps in their cognitive knowledge base that could affect practice outcomes. The costs of PBL may slow its implementation in schools

with class sizes larger than 1OO. While weaknesses in the criteria used to assess the outcomes of PBL and general weaknesses in study design limit the confidence one can give conclusions drawn from the literature, the authors recommend that caution be exercised in making comprehensive, curriculum-wide conversions to PBL until more is learned about (1) the extent to which faculty should direct students throughout medical training, (2) PBL methods that are less costly, (3) cognitive-processing weaknesses shown by PBL students, and (4) the apparent high resource utilization by PBL students.

References

Anderson, A.S. (1989). Conversion to problem-based learning in 15 months. In: *Abstracts of the innovations in medical education exhibits: The 100th Annual Meeting of the Association of American Medical Colleges* [Unpublished compilation] Washington, D.C.: Association of American Medical Colleges.

Barrows, H.S., & Tamblyne, R.M. (1980). Problem-based learning: An approach to medical education. New York, NY: Springer Publishing Company.

Barrows, H.S., & Tamblyn, R.M. (1976). An evaluation of problem-based learning in small groups utilizing a simulated patient. *Journal of Medical Education, 51,* 52-54.

Barrows, H.S. (1985). *How to design a problem-based curriculum for the preclinical years.* New York, NY: Springer Publishing Company.

Barrows, H.S. (1986). A taxonomy of problem-based learning methods. *Medical Education, 20,* 481-486.

Barrows, H.S., Myers, A., Williams, R.G., & Moticka, E.J. (1986). Large group problem-based learning: A possible solution for the '2 sigma problem'. *Medical Teacher, 8,* 325-331.

Benor, D.E. (1984). An alternative non-brunerian approach to problem-based learning. In: H.G. Schmidt, & M.L. de Volder (Eds.). *Tutorials in problem-based learning.* Maastricht, The Netherlands: Van Gorcum, Assen.

Berkson, L. (1990). *Critique of problem-based learning: A review of the literature.* [Unpublished master's thesis] University of Illinois at Chicago.

Bickley, H., Donnere R. S., Walker, A. N., & Tift, J. P. (1990). Pathology education in a problem-based medical curriculum. *Teaching and Learning in Medicine, 2,* 38-41.

Blumberg, P., & Eckenfels E. (1988). A comparison of student satisfaction with their preclinical environment in a traditional and a problem-based curriculum. In: *Research in medical education, 1988: Proceedings of the Twenty-Seventh Annual Conference.* Washington, D.C.: Association of American Medical Colleges.

Blumberg, P., Michaele J.A., & Zeitz, H. (1990). Roles of student-generated learning issues in problem-based learning. *Teaching and Learning in Medicine, 2,* 149-154.

Blumberg, P., & Michael, J. A. (1992). Development of self-directed learning behaviors in a partially teacher-directed problem-based learning curriculum. *Teaching and Learning in Medicine, 4,* 3-8.

Bordage, G. (1987). The curriculum: Overloaded and too general? *Medical Education, 21,* 183-188.

Bordage, G., & Lemieux, M. (1991). Semantic structures and diagnostic thinking of experts and novices. In: *Research in medical education.* Academic Medicine, 66, S70-S72.

Bridghame, R., Solomon, D., & Hafe J. (1991). The effect of curriculum era on NBME part I outcomes in a problem-based versus a traditional curriculum track. In: *Research in medical education.* Academic Medicine, 66, S82-S84.

Claesson, H.F.A., & Boshuizen, H.P.A. (1985). Recall of medical information by students and doctors. *Medical Education, 19,* 61-67.

Clarke, R.M., Feletti, G.I., & Engel, C. E. (1984). Student perceptions of the learning environment in a new medical school. *Medical Education, 18,* 321-325.

Cohen, J. (1969). Statistical power analysis for the behavioral sciences. New York, NY: Academic Press.

Coles, C.R. (1985). Differences between conventional and problem-based curricula in their students' approaches to studying. *Medical Education, 19,* 308-309.

Coles, C.R. (1990). Evaluating the effects curricula have on student learning: Toward a more competent theory for medical education. In: Z.M. Nooman, H.G. Schmidt, & E.S.Ezzat (Eds.). *Innovation in medical education: An evaluation of its present status.* New York, NY: Springer Publishing Company.

Coulson, R.L. (1983). Problem-based student-centered learning of the cardiovascular system using the problem-based learning module (P.B.L.M.). *Physiologist, 26,* 220-224.

Coulson, R.L., & Osborne, C.E. (1984). Insuring curricular content in a student-directed problem-based learning program. In: H.G. Schmidt, & M.L. de Volder (Eds.). *Tutorials in problem-based learning.* Maastricht, The Netherlands: Van Gorcum, Assen.

Davis, W.K., Nairn R., Painee M. E., Anderson R.M., & Oh, M. S. (1992). Effects of expert and non-expert facilitators on the small-group process and on student performance. *Academic Medicine, 67,* 407-474.

De Volder, M.L. (1982). Discussion groups and their tutors: Relationships between tutor characteristics and tutor functioning. *Higher Education, 14,* 269-271.

De Volder, M.L., de Grave, W.S., & Gijselaers, W. (1985). Peer teaching: Academic achievement of teacher-led versus student-led discussion groups. *Higher Education, 14,* 643-650.

De Vries, M., Schmidt, H.G., & de Graaff, E. (1989). Dutch comparisons: Cognitive and motivational effects of problem-based learning on medical students. In: H.G. Schmidt, M. Lipkin, Jr., M.W. de Vries, & J.M. Greep (Eds.). *New directions for medical education: Problem-based learning and community-oriented medical education.* New York, NY: Springer-Verlag.

Des Marchais, J.E., Bureau, M.A., Dumais, B., & Pigeon, G. (1992). From traditional to problem-based learning: A case report of complete curriculum reform. *Medical Education, 26,* 190-199.

Dolmans, D.H.J.M., Gijselaers, W.H., & Schmidt, H.G. (1992). *Do students learn what their teachers intend they learn?* Guiding processes in problem-based learning. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

Donner, R.S., & Bickley, H. (1990). Problem-based learning: An assessment of its feasibility and cost. *Human Pathology, 21,* 881-885.

Eagle, C.J., Harasyme P.H., & Mandin, H. (1992). Effects of tutors with case expertise on problem-based learning issues. *Academic Medicine, 67,* 465-469.

Entwistle, N.J. (1981). *Styles of learning and teaching.* New York, NY: John Wiley and Sons.

Entwistle, N.J., & Ramsden, P. (1983). *Understanding student learning.* London, England: Crom Helm.

Eisenstaedt, R.S., Barry, W.E., & Glanz, K. (1990). Problem-based learning: Cognitive retention and cohort traits of randomly selected participants and decliners. In: *Research in Medical Education.* Academic Medicine, 65, S11-S12.

Farquhar, L.J., Haf, J., & Kotabe, K. (1986). Effect of two preclinical curricula on NBME part I examination performance. *Journal of Medical Education, 61,* 368-373.

Feletti, G.I., Doyle, E., Petrovic, A., & Sanson-Fisher, R. (1982). Medical students' evaluation of tutors in a group-learning curriculum. *Medical Education, 16,* 319-325.

Feletti, G.I., & Carver, S.T., Office of Educational Development, Harvard Medical School. (1989). The new pathway to general medical education at Harvard University. *Teaching and Learning in Medicine, 1,* 42-46.

Flexner, A. (1910). Medical education in the United States and Canada. A report to the Carnegie Foundation for the Advancement of Teaching. *Bulletin No. 4.* Boston, Massachusetts: Updyke.

Friedman, C.P., et al. (1990). Charting the winds of change: Evaluating innovative medical curricula. *Academic Medicine, 65,* 8-14.

Gilhooly, K.J. (1990). Cognitive psychology and medical diagnosis. *Appendix Cognitive Psychology, 4,* 261-272.

Glick, S.M. (1991). Problem-based learning and community-oriented medical education. *Medical Education, 25,* 542-545.

Goodman, L.J., et al. (1991). An experiment in medical education: A critical analysis using traditional criteria. *JAMA, 265,* 2373-2376.

Gruppen, L.D., Trabere P., Painee, M.E. Woollisoroft, J.O., & Davis, W.K. (1992). *Tutor-led and student led small groups: No differences in learning?* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, California.

Heale, J., et al. (1988). A randomized controlled trial assessing the impact of problem-based versus didactic teaching methods in CME. In: *Research in medical education: Proceedings of the Twenty-Seventh Annual Conference.* Washington, D.C.: Association of American Medical Colleges.

Hedges L.V., & Olkin, I. (1985). *Statistical methods for meta-analysis.* Orlando, Florida: Academic Press.

Hersey, P., & Blanchard, K.H. (1982). *Management of organizational behavior.* Englewood Cliffs, New Jersey: Prentice-Hall.

Hunter, J.E., & Schmidt, F.E. (1990). *Methods of meta-analysis: Correcting error and bias in research findings.* Newbury Park, California: Sage.

Jones, J.W., Bieber, L.L., Echt, R., Scheifleye V., & Ways, P.0. (1984). A problem-based curriculum - ten years of experience. In: H.G. Schmidt, & M.L. de Volder (Eds.). *Tutorials in problem-based learning.* Maastricht, The Netherlands: Van Gorcum, Assen.

Kaufman, A., (Ed.). (1985). *Implementing problem-based medical education: Lessons from successful innovations.* New York, NY: Springer Publishing Company.

Kaufman, A., et al. (1989). The new Mexico experiment: Educational innovation and institutional change. *Academic Medicine, 64,* 285-294.

Lemieux, M., & Bordage, G. (1992). Propositional versus structural semantic analyses of medical diagnostic thinking. Cognitive Science, 16, 185-204.

Majoor, G.D., Schmidt, H.G., Snellen-Balendonge, H.A.M., Moust, J.H.C., & Stalenhoef-Halling, B. (1990). Construction of problems for problem-based learning. In: Z.M. Nooman, H.G. Schmidt, & E.S. Ezzat (Eds.). *Innovation in medical education: An evaluation of its present status.* New York, NY: Springer Publishing Company.

Mattern, W.D. (1992). Should faculty tutors for PBL groups be content experts? (Commentary). *Academic Medicine, 67,* 454.

Maxwell, J.A., & Wilkerson, L. (1990). A study of non-volunteer faculty in a problem-based curriculum. In: Research in medical education. *Academic Medicine, 65,* S13-S14.

McAuley, R.G., & Woodward, C.W. (1984). Faculty perceptions of the McMaster M.D. Program. *Journal of Medical Education, 59,* 842-843.

Mennin, S.P., & Martinez-Burrola, N. (1986). The cost of problem-based vs traditional medical education. *Medical Education, 20,* 187-194.

Mitchell, R. (1992). *The development of the cognitive behavior survey to assess medical student learning.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, California.

Moore, G.T. (1991). The effect of compulsory participation of medical students in problem-based learning. *Medical Education, 25,* 140-143.

Moore, G.T., Block, S., & Mitchell, R. (1990). *A randomized controlled trial evaluating the impact of the new pathway curriculum at Harvard Medical School.* Report to the Fund for the Improvement of Post-Secondary Education. [Unpublished report] Cambridge, Massachusetts: Harvard Medical School.

Moore-West, M., & O'Donnell, M.J. (1985). Program evaluation. In: A. Kaufman (Ed.). *Implementing problem-based medical education: Lessons from successful innovations.* New York, NY: Springer Publishing Company.

Moore-West, M., Harrington, D.L., Mennin, S.P., Kaufman, A., & Skipper, B.J. (1989). Distress and attitudes toward the learning environment. Effects of a curriculum innovation. *Teaching and Learning in Medicine, 1,* 151-157.

Moust, J.H.C., de Volder, M.L., & Nuy, H.J.P. (1989). Peer teaching and higher level cognitive learning outcomes in problem-based learning. *Higher Education, 18,* 737-

742.

Moust, J.H.C., de Grave, W.S., & Gijselaers. W.H. (1990). The tutor role: A neglected variable in the implementation of problem-based learning. In: Z.M. Nooman, H.G. Schmidt, & E.S. Ezzat, (Eds.). *Innovation in medical education: An evaluation of its present status.* New York, NY: Springer Publishing Company.

Moust, J.H.C., & Schmidt, H.G. (1992). *Undergraduate students as tutors: Are they as effective as faculty in conducting small-group tutorials?* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, California.

Muller, S. (1984). Physicians for the twenty-first century: Report of the project panel on the general professional education of the physician and college preparation for medicine. *Journal of Medical Education, 59,* Part 2.

Neame, R.L.B. (1981). How to construct a problem-based course. *Medical Teacher, 3,* 94-99.

Neame, R.L.B., & Powis, D.A. (1981). Toward independent learning: Curricular design for assisting students to learn how to learn. *Journal of Medical Education, 56,* 886-893.

Neame, R.L.B. (1989). Problem-based medical education: The Newcastle approach. In: H.G. Schmidt, M. Lipkin, Jr., M.W. de Vries, & J.M. Greep, (Eds.). *New directions for medical education: Problem-based learning and community-oriented medical education.* New York, NY: Springer-Verlag.

Neufeld, V.R., & Barrows, H.S. (1974). The 'McMaster philosophy': An approach to medical education. *Journal of Medical Education, 49,* 1040-1050.

Neufeld, V.R., Woodward, C.A., & MacLeod, S.M. (1989). The McMaster M.D. program: A case study of renewal in medical education. *Academic Medicine, 64,* 423-432.

Newble, D.I., & Clarke, R.M. (1986). The approaches to learning of students in a traditional and in an innovative problem-based medical school. *Medical Education, 20,* 267-273.

Nolte, J., Eller, P., & Ringel, S.P. (1988). Shifting toward problem-based learning in a medical school neurobiology course. In: *Research in medical education: Proceedings of the twenty-seventh Annual Conference.* Washington, D.C.: Association of American Medical Colleges.

Norman, G.R., & Schmidt, H.G. (1992). The psychological basis of problem-based learning: A review of the evidence. *Academic Medicine, 67,* 557-565.

Olson, J.O. (1987). The McMaster philosophy: A student's perspective on implementation. *Medical Education, 2,* 293-296.

Patel, V.L., Groen, G.J., & Norman, G.R. (1991). Effects of conventional and problem-based medical curricula on problem solving. *Academic Medicine, 66,* 380-389.

Pawlak, S.M., Popovich, N.G., Blanke .J.W., & Russell, J.D. (1989). Development and validation of guided design scenarios for problem-solving instruction. American *Journal of Pharmacological education, 53,* 7-16.

Post, G.J., & Drop, M.J. (1990). Perceptions of the content of the medical curriculum at the medical faculty in Maastricht: A comparison with traditional curricula in the Netherlands. In: Z.M. Nooman, H.G. Schmidt, & E.S. Ezzat (Eds.). *Innovation in* *medical education: An evaluation of its present status.* New York, NY: Springer Publishing Company.

Puett, D., & Braunstein, J.J. (1991). The endocrine module: An integrated course for first-year medical students combining lecture-based and modified problem-based curricula. *Teaching and Learning in Medicine, 3,* 159-165.

Rangachari, P.K. (1991). Design of a problem-based undergraduate course in Pharmacology: Implications for the teaching of physiology. In: *Advances in Physiology education.* American Journal of Physiology, 260, S14-S21.

Santos-Gomez, L., Kalishman, S., Rezlere, A., Skipper B., & Mennin, S.P. (1990). Residency performance of graduates from a problem-based and a conventional curriculum. *Medical Education, 24,* 366-375.

Saunders, K., Northupe D.E., & Mennin, S.P. (1985). The library in a problem-based curriculum. In: A. Kaufman, (Ed.). *Implementing problem-based medical education: Lessons from successful innovations.* New York, NY: Springer Publishing Company.

Saunders, N.A., McIntosh, J., McPherson, J., & Engel, C. E. (1990). A comparison between University of Newcastle and University of Sydney final-year students: Knowledge and competence. In: Z.M. Nooman, H.G. Schmidt, & E.S. Ezzat (Eds.). *Innovation in medical education: An evaluation of its present status.* New York, NY: Springer Publishing Company.

Schmidt, H.G. (1983). Problem-based learning: Rationale and description. *Medical Education, 17,* 11-16.

Schmidt, H.G. (1990). Innovative and conventional curricula compared: What can be said about their effects? In: Z.M. Nooman, H.G. Schmidt, & E.S. Ezzat (Eds.). *Innovation in medical education: An evaluation of its present status.* New York, NY: Springer Publishing Company.

Schwartz, R.W., Middleton, J., Nash, P.P., White, F.M., & Young, B. (1991). The history of developing a student-centered, problem-based surgery clerkship. *Teaching and Learning in Medicine, 3,* 38-44.

Shahabudin, S.H. (1987). Content coverage in problem-based learning. *Medical Education, 21,* 310-313.

Shope, T.R. (1989). Student-initiated analysis and change of a medical school curriculum. *Academic Medicine, 64,* 300-301.

Sibley, J.C. (1989). Toward an emphasis on problem solving in teaching and learning: The McMaster experience. In: H.G. Schmidt, M. Lipkin, Jr., M.W. de Vries, & J.M. Greep. (Eds.). *New directions for medical education: Problem-based learning and community-oriented medical education.* New York, NY: Springer-Verlag.

Silver, M., & Wilkerson, L. (1991). Effects of tutors with subject expertise on the problem-based tutorial process. *Academic Medicine, 66,* 298-300.

Spitzer, R.L. *Diagnostic and statistical manual of mental disorders.* Third Edition, Revised. Washington, D.C.: American Psychiatric Association.

Thomas, R.E. (1992). Teaching medicine with cases: Student and teacher opinion. *Medical Education, 26,* 200-207.

Tolnai, S. (1991). Continuing medical education and career choice among graduates of problem-based and traditional curricula. *Medical Education, 25,* 414-420.

Verwijnen, M., Van der Vleuten, C., & Imbos, T. (1990). A comparison of an innovative medical school with traditional schools: An analysis in the cognitive domain. In: Z.M. Nooman, H.G. Schmidt, & E.S. Ezzat (Eds.). *Innovation in medical education: An evaluation of its present status.* New York, NY: Springer Publishing Company.

Wales, C.E., & Stager, R. (1972). Design of an educational system. *Engineering Education, 62,* 456-459.

Walton, H.J., & Matthews, M.B. (1989). Essentials of problem-based learning. *Medical Education, 23,* 542-558.

West, D.A., & West, M.M. (1987). Problem-based learning of psychopathology in a traditional curriculum using multiple conceptual models. *Medical Education, 21,* 151-156.

Wetzel, M., Ramos, M., Armstrong, E., & Neill, J. (1989). Harvard Medical School: The new pathway. From pilot track to school-wide program. In: *Abstracts of the innovations in medical education exhibits*: The 100th Annual Meeting of the Association of American Medical Colleges. [Unpublished compilation.] Washington, D.C.: Association of American Medical Colleges.

Wilkerson, L., & Feletti, G. (1989). Problem-based learning: One approach to increasing student participation. In: A.F. Lucas (Ed.). *The department chairperson 's role in enhancing college teaching.* New Directions for Teaching and Learning, 37. San Francisco, California: Jossey - Bass.

Wilkerson, L., Hafler, J.P., & Liu, P. (1991). A case study of student-directed discussion in four problem-based tutorial groups. In: *Research in medical education.* Academic Medicine, 66, S79-S81.

Wilkerson, L. (1992). *Identification of skills for the problem-based tutor: Student and faculty perspectives.* Paper presented at the Annual Meeting of the American Educational Research Association. San Francisco, California.

Wolf, F.M. (1986). *Meta-analysis: Quantitative methods for research synthesis.* Beverly Hills, California: Sage.

Woodward, C.A. (1990). Monitoring and innovation in medical education: The McMaster experience. In: Z.M. Nooman, H.G. Schmidt, & E.S. Ezzat (Eds.). *Innovation in medical education: An evaluation of its present status.* New York, NY: Springer Publishing Company.

Woodward, C.A., McAuley, R.G., & Ridge, H. (1981). Unravelling the meaning of global comparative ratings of interns. In: *Research in medical education: Proceedings of the twentieth Annual Conference.* Washington, D.C.: Association of American Medical Colleges.

Woodward, C.A., & Ferrier, B.M. (1982). Perspectives of graduates two or five years after graduation from a three-year medical school. *Journal of Medical Education, 57,* 294-302.

Woodward, C.A., & Ferrier, B.M. (1983). The content of the medical curriculum at

McMaster University: Graduates' evaluation of their preparation for post-graduate training. *Medical Education, 17,* 54-60.

Woodward, C., Ferrier, B.M., Goldsmith, C., & Cohen, M. (1988). Billing patterns of general practitioners and family physicians in Ontario: A comparison of graduates of McMaster Medical School with graduates of other Ontario medical schools. In: *Research in medical education: Proceedings of the twenty-seventh Annual Conference.* Washington, D.C.: Association of American Medical Colleges.

Woodward, C.A., Ferrier, B.M., Cohen, M., & Goldsmith, C. (1990). A comparison of the practice patterns of general practitioners and family physicians graduating from McMaster and other Ontario medical schools. *Teaching and Learning in Medicine, 2,* 79-88.

Does Problem-Based Learning Work? A Meta-Analysis of Evaluative Research.
Vernon, D.T.A., & Blake, R.L. (1993).
Academic Medicine, 68, 550-563.
The purpose of this review is to synthesize all available evaluative research from 1970 through 1992 that compares problem-based learning (PBL) with more traditional methods of medical education. Five separate meta-analyses were performed on 35 studies representing 19 institutions. For 22 of the studies (representing 14 institutions), both effect-size and supplementary vote-count analyses could be performed; otherwise, only supplementary analyses were performed. PBL was found to be significantly superior with respect to students' program evaluations (i.e., students' attitudes and opinions about their programs) - dw (standardized differences between means, weighted by sample size) = +.55, CI.95 = +.4O to +.70- and measures of students' clinical performance (dw = +.28, CI.95 = +.16 to +.40). PBL and traditional methods did not differ on miscellaneous tests of factual knowledge (dw = -.09, CI.95 = +.06 to -.24) and tests of clinical knowledge (dw = +.08, CI.95 = -.05 to +.21). Traditional students performed significantly better than their PBL counterparts on the National Board of Medical Examiners Part I examination-NBME I (dw = -.18, CI.95 = -.10 to -.26). However, the NBME I data displayed significant overall heterogeneity (Qt = 192.23, p < .001) and significant differences among programs (Qb = 59.09, p < .001), which casts doubt on the generality of the findings across programs. The comparative value of PBL is also supported by data on outcomes that have been studied less frequently, i.e., faculty attitudes, student mood, class attendance, academic process variables, and measures of humanism. In conclusion, the results generally support the superiority of the PBL approach over more traditional methods.

Performances on the NBME I, II, and III by Medical Students in the Problem-based Learning and Conventional Tracks at the University of New Mexico. Mennin, S.P., Friedman, M., Skipper, B., Kalishman, S., & Snyder, J. (1993).
Academic Medicine, 68, 616-624.
Background. Problem-based learning curricula are growing in popularity, and questions have been raised about the appropriateness of standardized examinations, such as the

National Board of Medical Examiners (NBME) Parts I, II, and III examinations, for assessing students in these new curricula. Method. Data on students' performances on the NBME I were analyzed for 508 graduates of the conventional track and 167 graduates of the problem-based Primary Care Curriculum (PCC) track at the University of New Mexico School of Medicine from the classes of 1983-1992; on NBME II, for 447 and 144 graduates, respectively (classes of 1983-1991); and on NBME III, for 313 and 100 graduates, respectively (classes of 1983 - 1989). The analyses also included data on the students' total Medical College Admission Test (MCAT) scores, undergraduate science grade-point averages (SGPAs), and admission subgroups within tracks. The statistical methods included analysis of covariance, Student's t-test, and the Fisher exact test. Results. The students who had requested the PCC track but had been randomized into the conventional track had the highest mean scores on all the study variables (for 34 students, 521 on the NBME I, and for 19 students, 551 on the NBME III). The high-risk students who had requested but had not been accepted into the PCC track seemed to benefit from the highly structured conventional track with regard to their NBME I performances (467 for 18 students). The PCC students -both those who had been randomized into the PCC and those who had been selected into the PCC - had significantly lower mean scores on the NBME I (455 for 85 students and 463 for 82 students compared with 505 for the 439 students who chose the conventional track), but significantly higher mean scores on the NBME III (521 for 38 students and 522 for 62 students compared with 483 for the seven high-risk students and 487 for the 276 students who chose the conventional track). For both tracks, strong relationships were found among the scores on the three NBME examinations. For the PCC students, significantly weaker relationships were found between mean SGPAs and mean scores on the NBME I, II, and III. For both tracks, MCAT scores, especially in the lowest and highest ranges, were most predictive of performances on the NBME I and II. Conclusion. In the short run, the more teacher-centered and structured conventional curriculum better prepared the students for the NBME I, while in the long run, the more student-centered problem-based curriculum better prepared the students for the NBME III.

Influence of Tutors' Subject-matter Expertise on Student Effort and Achievement in Problem-Based Learning. Schmidt, H.G., Van der Arend, A., Moust, J.H.C., Kokx, I., & Boon, L. (1993).
Academic Medicine, 68, 784-791.
Purpose. To investigate the effects of tutors' subject-matter expertise on students' levels of academic achievement and study effort in a problem-based health sciences curriculum. Also, to study differences in tutors' behaviors and the influences of these differences on students' performances. Method. Data were analyzed from 336 staff-led tutorial groups involving student participants in seven four-year undergraduate programs at the University of Limburg Faculty of Health Sciences in 1989-90. Overall, 1,925 data records were studied, with each student participating in an average of 1.7 groups led by either content experts or non-experts. The basic analyses were of (1) students' achievement scores as a

function of tutors' expertise levels and students' curriculum year; (2) students' estimates of self-study time as a function of tutors' expertise levels and students' curriculum year; and (3) the average ratings of the tutors' behaviors as a function of tutors' expertise levels. Statistical methods included analysis of variance and Pearson correlations. Results. The students guided by subject-matter experts were shown to spend more time on self-directed study, and they achieved somewhat better than the students guided by non-expert tutors. The effect of subject-matter expertise on achievement was strongest in the first curriculum year, suggesting that novice students are more dependent on their tutors' expertise than are more advanced students. Also, the content-expert tutors made more extensive use of their subject-matter knowledge to guide students. However, in addition to the tutors' knowledge-related behaviors, the tutors' process-facilitation skills affected student achievement. Moreover, these two sets of behaviors were correlated, indicating that both are necessary conditions for effective tutoring. Conclusion. The results indicate that, at least for the curriculum studied, the assumption in the literature that tutors do not necessarily need content knowledge so long as they are skilled in the tutoring process is not entirely justified. The students who were guided by content experts achieved somewhat better and spent more time on self-directed learning. More important, tutoring skill and content knowledge seemed to be necessary and closely related conditions for effective tutoring.

References

Barrows, H.S., & Tamblyn, R.M. (1980). *Problem-based learning.* New York, NY: Springer Publishing.

Barrows, H.S. (1985). *How to design a problem-based curriculum for the preclinical years.* New York, NY: Springer Publishing.

Barrows, H.S. (1987). *The tutorial process.* Springfield, Illinois: Southern Illinois University.

Eagle, C.J., Harasym, P.H., & Mandin, H. (1992). Effects of tutors with case expertise on problem-based learning issues. *Academic Medicine, 67,* 465-469.

Davis, W.K., Nairn, R., Paine, M.E., Anderson, R.M., & Oh, M.S. (1992). Effects of expert and non-expert facilitators on the small-group process and on student performance. *Academic Medicine, 67,* 470-474.

Wilkerson, L., Hafler, J.P., & Liu, P.A. (1991). Case study of student-directed discussion in four problem-based tutorial groups. In: *Proceedings of the thirtieth Annual Conference on research in medical education.* Academic Medicine, 66, S79 - S81.

Silver, M., & Wilkerson, L. (1991). Effects of tutors with subject expertise on the problem-based tutorial process. *Academic Medicine, 66,* 298-300.

Schmidt, H.G. (1977). *Niet-medici als tutor: Maakt het een verschil? (Non-medical staff as tutors: Does it make a difference?).* [Internal report] Maastricht, The Netherlands: University of Limburg.

Swanson, D.B., Stalenhoef-Halling, B.F., & Van der Vleuten, C.P.M. Effect of tutor characteristics on test performance of students in a problem-based curriculum. In: W. Bender, R.J. Hiemstra, A.J.J.A. Scherpbier, & R.P. Zwierstra (Eds.). (1990). *Teaching and Assessing Clinical Competence.* Groningen, The Netherlands: BoekWerk Publications.

Des Marchais, J.E., & Black, R. (1991). *Effect of tutor content expertise on student academic achievement in the Sherbrook problem-based curriculum.* (Unpublished manuscript). Quebec, Canada: Université de Sherbrook.

De Volder, M.L., De Grave, W.S., & Gijselaers, W.H. (1985). Peer teaching: Academic achievement of teacher-led versus student-led discussion groups. *Higher Education, 14,* 643-650.

De Grave, W.S., De Volder, M.L., Gijselaers, W.H., & Damoiseaux, V. (1990). Peer teaching and problem-based learning: Tutor characteristics, tutor functioning, group functioning and student-achievement. In: Z.N. Nooman, H.G. Schmidt, & E.S. Ezzat (Eds.). *Innovation in medical education: An evaluation of its present status.* New York, NY: Springer Publishing.

Gijselaers, W., Bouhuijs, P., Mulder, M., & Mullink, J. (1987). *Rapport: Experiment student-tutoren blok 1.5 en blok 1.6. (Report: Experiment with student tutors in unit 1.5 and unit 1.6)* FdEW-OC 87-237. Maastricht, The Netherlands: University of Limburg.

Moust, J.H.C., De Volder, M.L., & Nuy, H.J.P. (1989). Peer teaching and higher level cognitive learning outcomes in problem-based learning. *Higher Education, 18,* 737-742.

Moust, J.H.C. (1993). *De rol van tutors in probleemgestuurd onderwijs: Verschillen tussen docent-begeleide en student-begeleide groepen. (On the role of tutors in problem-based learning: Contrasting student-guided with staff-guided tutorials.)* PhD thesis. Maastricht, The Netherlands. Universitaire Pers Maastricht.

Gruppen, L.D., Traber, P., Paine, M.E., Woolliscroft, J.O., & Davis, W.K. (1992). *Tutor-led and student-led small groups: No differences in learning?* Paper presented at the Annual Meeting of the American Educational Research Association. San Francisco, California.

De Volder, M.L. (1982). Discussion groups and their tutors: Relationships between tutor characteristics and tutor functioning. *Higher Education, 11,* 269-271.

Gijselaers, W.H. (1988). Kwaliteit van het onderwijs gemeten (Measuring educational quality). PhD thesis. Maastricht, The Netherlands, University of Limburg.

Dolmans, D.H.J.M., Wolfhagen, I., & Schmidt, H.G. (1993). *Validation of a rating scale for tutor evaluation in a problem-based medical curriculum.* Paper presented at the Annual Meeting of the American Educational Research Association. Atlanta, Georgia.

Cohen, J. (1969). *Statistical power analysis for the behavioral Sciences.* New York, NY: Academic Press.

Schmidt, H.G. (1983). Problem-based learning: Rationale and description. *Medical Education, 17,* 11-16.

Problem Effectiveness in a Course Using Problem-Based Learning. Dolmans, D.H.J.M., Gijselaers, W.H., Schmidt, H.G., & Van der Meer, S.B. (1993).
Academic Medicine, 68, 207-213.

Background. Problem-based learning (PBL) emphasizes active generation of learning issues by students. Both students and teachers, however, tend to worry that not all important knowledge will be acquired. To explore this question, problem effectiveness (i.e., for each problem, the degree of correspondence between student-generated learning issues and preset faculty objectives) was examined in three interdependent studies. Method. The three studies used the same participants: about 120 second-year students and 12 faculty tutors in a six-week course on normal pregnancy, delivery, and child development at the medical school of the University of Limburg in The Netherlands, 1990-91. The participants were randomly assigned to 12 tutorial groups that were each given the same 12 problems; the problems were based on 51 faculty objectives; the tutors were asked to record all learning issues generated by their groups. Study 1 addressed this question: To what degree are faculty objectives reflected by student-generated learning issues? Study 2: To what extent do students miss certain objectives, and are these objectives classifiable? Study 3: Do students generate learning issues not expected by the faculty, and are these issues relevant to course content, and finally, why do students generate these issues? To help answer these questions, the studies employed expert raters and a teacher familiar with the course content. Results. Study 1: For the set of 12 problems, the average overlap between learning issues and faculty objectives was 64.2%, with the percentages for individual problems ranging from 27.7% to 100%. Study 2: Of the 51 objectives, 30 were not identified by at least one tutorial group; these objectives were grouped into three categories; on average, each group failed to identify 7.4 objectives (15%). Study 3: Of 520 learning issues, 32 (6%) were unexpected; 15 of these were judged to be at least fairly relevant to course content; they were grouped into four categories. Conclusions. The students' learning activities covered an average of 64% of the intended course content; in addition, the students generated learning issues not expected by the faculty, and half of these issues were judged relevant to the course content. Thus, PBL seems to permit students to adapt learning activities to their own needs and interests.

Early Introduction to Medical Problem-Solving. Lewkonia, R.M., Harasym, P.H., & Darwish, H.Z. (1993).
Medical Teacher, 15, 57-65.
This is a descriptive report of a course unit designed to introduce concepts of medical problem-solving during the first month of an undergraduate MD curriculum. The unit is also used to provide an introduction to the dynamics of cooperative small group learning. The value of the unit was endorsed by the subjective opinions of faculty tutors and students, who recognized the relevance of the unit to the clinical practice of doctors. An end-of-course examination demonstrated that some novice medical problem-solvers have difficulty with recursive hypothesis testing and tend to use linear strategies. This type of learning experience has the potential to identify students who may have subsequent difficulty in clinical reasoning tasks in the curriculum. Medical problem-solving itself is the primary focus of problem-based learning in the unit. Experience with this unit suggests that concepts of medical problem-solving can be introduced into the curriculum at a very early stage, without a prerequisite for substantial knowledge of medical sciences.
References

Barrows, H.S., & Tamblyn, R.M. (1980). *Problem-based learning. An approach to medical education.* New York. NY: Springer Publishing Company.

Barrows, H.S. (1983). Problem-based, self-directed learning. *Journal of the American Medical Association, 250,* 3077-3080.

Barrows, H.S., & Feltovich, P.J. (1987). The clinical reasoning process. *Medical Education, 21,* 86-91.

Bordage, G., Grant, J., & Marsden, P. (1990). Quantitative assessment of diagnostic ability. *Medical Education, 24,* 413-425.

Campbell, E.J.M. (1987). The diagnosing mind. *Lancet, i,* 849-851.

Campbell, E.J.M., Scadding, J.G., & Roberts, R.S. (1979). The concept of disease. *British Medical Journal, 2,* 757-762.

Cochrane, W.A. (1968). Philosophy and program for medical education at the University of Calgary Faculty of Medicine. *Canadian Medical Association Journal, 98,* 500-505.

De Volder, M.L., & De Grave, W.S. (1986a). Schema training in problem-based learning. *Teaching and Learning in Medicine, 1,* 16-20.

De Volder, M.L., & De Grave, W.S. (1986b). Approaches to learning in a problem-based programme: A developmental study. *Medical Education, 23,* 262-264.

Donnelly, M.B., Sisson, J.C., & Woolliscroft, J.O. (1990). The reliability of a hypotheses generation and testing task. *Medical Education, 24,* 507-511.

Eagle, C.J., Harasym, P.H., & Mandin, H. (1992). Effects of tutors with case experience on problem-based learning issues. *Academic Medicine, 67,* 465-469.

Elstein, A.S., Shulman, L.S., & Sprafka, S.A. (1990). Medical problem-solving: A 10-year retrospective. *Evaluation and the Health Professions, 13,* 5-36.

Grant, J., & Marsden, P. (1987). The structure of memorized knowledge in students and clinicians: An explanation for diagnostic expertise. *Medical Education, 21,* 92-98.

Grant, J., & Marsden, P. (1988). Primary knowledge: Medical education and consultant expertise. *Medical Education, 22,* 173-179.

Lambie, A.T., MacLean, C.M.U., & McGuire, R.J. (1981). The introduction of problem-based learning project into a clinical correlation course in the first year of the Edinburgh medical curriculum. *Medical Education, 15,* 209-215.

Norman, G.R. (1988). Problem-solving skills: Solving problems and problem-based learning. *Journal of Medical Education, 22,* 279-286.

Norman, G.R., Rosenthal, D., Brooks, L.R., Allen, S.W., & Muzzin, L.J. (1989). The development of expertise in dermatology. *Archives of Dermatology, 125,* 1063-1068.

Patel, V.L., Groen, G.J., & Norman, G.R. (1991). Effects of conventional and problem-based curricula on problem solving. *Academic Medicine, 66,* 380-389.

Schmidt, H.G., Norman, G.R., & Boshuizen, H.P.A. (1990). A cognitive perspective on medical expertise: Theory and implications. *Academic Medicine, 65,* 611-621.

Schön, D.A. (1982). *The reflective practitioner: How professionals think in action.* New York, NY: Basic Books, Inc.

Sisson, J.C., Donnelly, M.B., Hess, G.E., & Woolliscroft, J.O. (1991). The characteristics of early diagnostic hypotheses generated by physicians (experts) and students (novices) at one medical school. *Academic Medicine, 66,* 607-612.

Taylor, P.J., Harasym, P.H., & Laurenson, R.D. (1978). Introducing first-year medical students to early diagnostic hypotheses. *Journal of Medical Education, 53,* 402-409.

Van Weel, C. (1992). What our practices teach us. *British Journal of General Practice, 42,* 206-209.

Selection for Admission

Students' Psychosocial Characteristics as Predictors of Academic Performance in Medical School. Hojat, M., Robeson, M., Damjanov, I., Veloski, J.J., Glaser, K., & Gonnella, J.S. (1993).

Academic Medicine, 68, 635-637.

Purpose-To investigate the incremental effects of selected psychosocial measures - beyond the effects of conventional admission measures - in predicting students' academic performance in medical school. Method. In 1989-90, 210 second-year students at Jefferson Medical College were each asked to complete 11 psychosocial questionnaires that were then used as predictor of performance measures in medical school. The students' score on three subtests of the Medical College Admission Test (MCAT) were also used as predictors. Three composite measures of performance were used as the criterion measures: basic science examination grades, clinical examination grades, and ratings of clinical competence. A multiple regression algorithm (general linear model) was used for statistical analysis. Result: The response rate was 83% (175 students). When the psychosocial measures were added to the statistical models in which the common variances of the MCAT scores were already determined, significant increments in the common variances were observed for two of the three performance measures: basic science grades and clinical examination grades. Whereas only 4% of the common variance in the ratings of clinical competence could be accounted for by the MCAT scores, 14% could be accounted for by the psychosocial measures. Conclusion. The "noncognitive," or psychosocial, measures increased the magnitude of the relationships between the predictive and criterion measures of the students' academic performances, beyond the magnitude attained when only the conventional admission measures were used. Therefore, psychosocial measures should be considered as significant and unique predictors of performance in medical school.

References

Gonnella, J.S., Hojat, M., Erdmann, J.B., & Veloski, J.J. (1993). What have we learned, and where do we go from here? In: *Assessment measures in medical school, residency, and practice: The connections.* Academic Medicine, 68, S79-S87.

Hojat, M., Vogel, W.J., Zeleznik, C., & Borenstein, B.D. (1988). Effects of academic and psychosocial predictors of performance in medical school on coefficients of determination. *Psychology Report, 63,* 383-394.

Beck, A.T., & Beamesderfer, A. (1974). Assessment of depression: The depression inventory. In: P. Pichot (Ed.). *Psychological measurement in psychopharmacology.* Paris, France: Karger Basel.

Hojat, M., Erdmann, J.B., Robeson, M., Damjanov, I., & Glaser, K. (in press). *A study of psychometric characteristics of abridged versions of selected psychological measures given to medical students for the purpose of predicting their clinical competence.* Interdisciplinaria.

Hojat, M., Borenstein, B.D., & Shapurian, R. (1990). Perception of childhood dissatisfaction with parents and selected personality traits in adulthood. *Journal of General Psychology, 117,* 241-253.

Hojat, M., & Shapurian, R. (1987). Dimensionality of the Eysenck personality questionnaire. *Journal of General Psychology, 114,* 289-296.

Hojat, M. (1983). Comparison of transitory and chronic loners on selected personality variables. *British Journal of Psychology, 74,* 199-202.

Hojat, M. (1982). Psychometric characteristics of the UCLA loneliness scale. *Educational Psychology Measurements, 42,* 917-925.

Hojat, M. (1982). Loneliness as a function of selected personality variables. *Journal of Clinical Psychology, 38,* 137-141.

Hojat, M., & Shaprian, R. (1987). Anxiety and its measurement: A story of a short form of the Taylor manifest anxiety scale. *Journal of Social Behaviour Personality, 1,* 621-630.

Rural Doctor Recruitment: Does Medical Education in Rural Districts Recruit Doctors to Rural Areas? Magnus, J.H., & Tollan, A. (1993).
Medical Education, 27, 250-253.
The impact of the University of Tromso Medical School on the distribution of doctors in rural areas in northern Norway was evaluated by a postal questionnaire. The survey covered 11 graduation years (417 doctors), and the response rate was 84.2%. The establishment of a new medical school in northern Norway has clearly had beneficial effects: a total of 56.1% of the graduates stay in these remote areas. Of those who also spent their youth in northern Norway the proportion is 82.0%, compared to graduates who lived in the southern parts of the country while growing up (37.7%). The results clearly demonstrate that one of the main goals for the Medical School at the University in Tromso, to educate doctors who prefer to work in these rural areas, has been accomplished.

Stress

Medical Student Abuse: Perceptions and Experience. Bourgeois, J.A., Kay, J., Rudisill, J.R., Bienenfeld, D., Gillig, P., Klykylo, W.M., & Markert, R.J. (1993)
Medical Education, 27, 363-370.
A questionnaire containing 18 vignettes of common clinical educational situations with potentially abusive treatment of medical students and a 10-item attitude assessment about abusive behaviour were administered to the first- and fourth-year medical students at a mid-west US university medical school. The first- and fourth-year groups did not differ significantly on perceived abusiveness of most of the vignettes, although several of the

individual vignettes were perceived significantly differently by the two groups. As hypothesized, the fourth-year students had experienced such situations more frequently. Attitudes towards abusive behaviour did not differ between the two groups. The authors contrast teaching interactions perceived as educationally useful and not abusive with those seen as abusive and not useful and offer explanations for the differences observed. Finally, the possible implications of the results for medical education are discussed.

References

Awbrey, B.J. (1985). Reflections on medical education: Concerns of the student. *Journal of Medical Education, 60,* 98-105.

Baldwin, D.C., Daugherty, S.R., Eckenfels, E.J., & Leksas, L. (1988). The experience of mistreatment and abuse among medical students. *Proceedings of the Annual Conference on Research in Medical Education, 27,* 80-84.

Greenberg, L.W. (1990). Letter to the editor. *Journal of the American Medical Association, 264,* 1657.

Hardison, J.E. (1986). The house officer's changing world. *New England Journal of Medicine, 314,* 1713-1715.

Kay, J. (1990). Traumatic deidealization and the future of medicine. *Journal of the American Medical Association, 263,* 572-573.

Meli, R.J. (1990). Letter to the editor. *Journal of the American Medical Association, 264,* 1657-1658.

Psychiatric News (6 December 1991). *Effects of medical student abuse parallel those of child abuse, 4,* 23.

Richman, J.A., Flaherty, J.A., Rospenda, K.M., & Christensen, M.L. (1992). Mental health consequences and correlates of reported medical student abuse. *Journal of the American Medical Association, 267,* 692-694.

Rosenberg, D.A., & Silver, H.K. (1984). Medical student abuse. *Journal of the American Medical Association, 251,* 739-742.

Sheehan, K.H., Sheehan, D.V., White, K., Leibowitz, A., & Baldwin, D.C. (1990). A pilot study of medical student 'abuse'. *Journal of the American Medical Association, 263,* 533-537.

Silver, H.K., & Glicken, A.D. (1990). Medical student abuse. *Journal of the American Medical Association, 263,* 527-532.

Webster's Third New International Dictionary of the English Language, Unabridged (1986). Springfield, MA: Merriam-Webster inc.

Personal and Behavioral Variables Related to Perceived Stress of Second-Year Medical Students. Sheets, K.J., Gorenflo, D.W., & Forney, M.A. (1993).
Teaching and Learning in Medicine, 5, 2, 90-95.

A study of second-year medical students was conducted to determine if selected personal and behavioral variables are related to the perceived amount of stress. Medical students from seven medical schools (N = 555) responded to a mailed questionnaire that assessed their degree of academic, personal, and professional stress. Factors that significantly related to amount of academic stress were general satisfaction with life, sex of student, physical activity, alcohol use, hours of sleep per night, and total number of recent losses and misfortunes. Factors that significantly related to amount of personal stress were general satisfaction with life, sex of student, drug use, number of sensation-seeking sports and total number of recent losses and misfortunes. Although measured, professional stress was not considered an important component of a second-year medical students educational experience.

References.

Nadelson, C.C., Notman, M.T., & Preven, D.W. (1983). Medical student stress adaptation and mental health. In: S.C. Scheiber, B.B. Doyle (Eds.). *The impaired physician.* New York, NY: Plenum.

Adsett, C. (1976). Psychological health of medical students in relation to medical process. *Journal of Medical Education, 43,* 728-34.

Holmes, T.H., & Rahe, R.H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research, 11,* 213-8.

Holmes, T.H., & Masuda, M. (1974). Life change and illness susceptibility. In: B.S. Dohrenwend, & B.P. Dohrenwend (Eds.). *Stressful life events: Their nature and effects.* New York, NY: Wiley.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24,* 385-95.

Delongis, A., Coyne, J.C., Dakof, G., & Lazarus, R.S. (1982). Relationship of daily life hassles, uplifts, and major life events to health status. *Health Psychology, 1,* 119-36.

McGrath, J.E. (1970). Major substantive issues: Time, setting and the coping process. In: J.E. McGrath (Ed.). Social and psychological factors in stress. New York, NY: Holt, Rinehart & Winston.

Dohrenwend, B.P., de Figuerido, J.M. (1980). Remote and recent life events and psychopathology. In: D. Ricks, & B.S. Dohrenwend (Eds.). *Life history research in psychopathology.* New York, NY: Cambridge University Press.

Coburn, D., & Jovaisas, A.V. (1975). Perceived sources of stress among first-year medical students. Journal of Medical Education, 50, 589-95.

Parkerson, G.R., Broadhead, W.E., & Tse, C.K. (1990). The health status and life satisfaction of first-year medical students. *Academic Medicine, 65,* 586-588.

McAuliffe, W.E., Wechsler, H., Rohman, M., et al. (1984). Psychoactive drug use by young and future physicians. *Journal of Health and Social Behavior, 25,* 34-54.

McAuliffe, W.E., Santangelo, S., Magnuson, E., Sobol, A., Rohman, M., & Weissman, J. (1987). Risk factors of drug impairment in random samples of physicians and medical students. *International Journal of Addiction, 22,* 825-841.

Forney, M.A., Forney, P., Yates, M., et al. (1987). *Psychosocial and sociodemographic correlates of heavy drinking among first-year medical students.* Paper presented at the American Medical Association's 8th National Conference on Impaired Physicians. Chicago.

Forney, P.D., Forney, M.A., & Ripley, W.K. (1988). A profile and prediction study of problem drinking among first-year medical students. *International Journal of Addiction, 23,* 767-779.

Forney, P.D., Forney, M.A., Fischer, P., et al. (1988). Sociocultural correlates of substance use among medical students. *Journal of Drug Education, 18,* 97-108.

Forney, M.A., Forney, P.D., Sheets, K.J., et al. (1990). The relationship between stress and substance use among first-year medical students: An exploratory investigation. *Journal of Alcohol and Drug Education, 35,* 54-65.

Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16,* 297-334.

Crano, W.D., & Brewer, M.B. (1986). *Principles and methods of social research.* Boston: Allyn & Bacon.

Edwards, M., & Zimet, C. (1976). Problems and concerns among medical students. *Journal of Medical Education, 51,* 619-25.

Rosenberg, P.P. (1971). Students' perceptions and concerns during their first year in medical school. *Journal of Medical Education, 46,* 211-218.

Coombs, R.H., Perell, K., & Ruckh, J.M. (1990). Primary prevention of emotional impairment among medical trainees. *Academic Medicine, 65,* 576-581.

Nathan, R.G., Nixon, F.E., Robinson, L.A., Bairnsfather, L., Allen, J.H., & Hack, M. (1987). Effects of a stress management course on grades and health of first-year medical students. *Journal of Medical Education, 62,* 514-517.

Goetzel, R.Z., Croen, L.G., Shelov, S., Boufford, J.I., & Levin, G. (1984). Evaluating self-help support groups for medical students. *Journal of Medical Education, 59,* 331-340.

Ficklin, F.L., Hazelwood, J.D., Carter, J.E., & Shellhamer, R.H. (1983). Evaluation of a small-group support program for first-year medical students. *Journal of Medical Education, 58,* 817-819.

Bowles, L.T. (1987). Fitness programs for medical students and faculty members [Editorial]. *Journal of Medical Education, 62,* 945.

Calkins, E.V., Arnold, L.M., Margolin, R.L., Sirridge, M.S., & Shannon, R.G. (1987). Functions of a women's support group in a school of medicine. *Journal of The American Medical Women's Association, 42,* 51-53.

Martin, C.A., Jones, J.L., & Bird, M.A. (1988). Support systems for women in medicine. *Journal of the American Medical Women's Association, 43,* 77-78, 83-84.

Teaching

Teaching Clinical Methods to Medical Students. Oswald, N.T.A. (1993).
Medical Education, 27, 351-354.

This paper demonstrates that it is feasible to teach clinical methods in general practice and describes the organization of an appropriate attachment. Willing practitioners, properly briefed, are competent to undertake clinical methods teaching and the attachment provides satisfaction to both students and teachers. It is possible to provide in primary care the elements which seem to be the key to this outcome - protected time, teaching in very small groups, direct observation and concentration on systematic examination rather than on particular physical signs. There is a strong case for the promoting of clinical methods teaching by general practitioners.

Methods of Teaching Medicine Using Cases. Thomas, R.E. (1993).
Medical Teacher, 15, 27-34.
One form of experiential learning is the case study. It may have many formats: the structured bedside case; patient management problems; extended case studies; clinico-pathological conferences; computerized or video-disc case studies; and classroom electronic display of student responses. There are few randomized controlled trials comparing teaching by the case method with lectures, and none of the educational trials have adequate power. Researchers need to include biostatisticians and psychometricans in their research teams if the case method of teaching in medicine is to be adequately tested.

A Model for Clinical Teaching and Learning. Price, D.A., & Mitchell, C.A. (1993).
Medical Education, 27, 62-68.
A set of criteria to observe clinical teaching was developed and used to describe and evaluate the teaching behaviour of 24 tutors of medical students in their initial clinical skill term. The tutors had no previous instruction in teaching techniques, nor had their teaching been previously evaluated. The criteria used focus on six basic dimensions: the teaching/learning environment; the degree of intellectual challenge; the degree of interaction; the logical structure of teaching sessions; the quality of teaching skills; and the modelling of professional skills and attitudes. A continuum of teaching behaviour was observed in each dimension, with most tutors demonstrating adequate levels of performance in each. The tutors all strongly supported the evaluation and the feedback they received. Their subsequent teaching behaviour will be reviewed to assess the impact of this feedback.

Characteristics of Family Physician's Clinical Teaching Behaviors in the Ambulatory Setting: A Descriptive Study. Hekelman, F.P., Vanek, E., Kelly, K., & Alemagno, S. (1993)
Teaching and Learning in Medicine, 5, 1, 18-23.
The one-on-one encounter between the physician teacher and the learner is the major clinical teaching vehicle in the ambulatory setting. Few medical educators have observed the encounter for its length; frequency and types of physician teaching behaviors; or the pattern of the encounter - relying instead on perceptions of the outcomes of the teaching/learning process. The purpose of this study was to describe the instructional activities occurring in physician-learner encounters. Sixteen family physicians were observed performing 10 teaching encounters each. A clinical observation instrument captured and categorized 17 clinical teaching and non-teaching behaviors. The results of the study suggest that the encounter is driven by the patient and that little attention is focused on traditional elements of instruction such as setting expectations and giving feedback.

References

Panel on the General Professional Education of the Physician. (1984). Physicians for the twenty-first century: The GPEP report. *Journal of Medical Education, 59,* 11, 1-208.

Weinholtz, D. (1988). How clinical teaching is studied. In: J. Edwards, & R. Marier (Eds.). *Clinical teaching for medical residents.* New York, NY: Springer Publishing Company.

Irby, D. (1978). Clinical teacher effectiveness in medicine. *Journal of Medical Education, 53,* 808-815.

Irby, D., & Rakestraw, P. (1981). Clinical teaching in medicine. *Journal of Medical Education, 56,* 181-186.

Wolverton, S.E., & Bosworth, M.F. (1985). A survey of resident perceptions of effective teaching behaviors. *Journal of Family Medicine, 18, 3,* 106-108.

Ullian, J. (1989). *Family practice residents' perceptions of the role of preceptor: A content analysis of written evaluative comments.* Doctoral thesis, University of Minnesota, Minneapolis.

Mattern, W.D., Weinholtz, D., & Friedman, C.P. (1983). The attending physician as teacher. *New England Journal of Medicine, 30,* 1129-1132.

Adams, W., Ham, H.T., Mawardi, B., Scali, H., & Weissman, R. (1964). A naturalistic study of teaching in a clinical clerkship. *Journal of Medical Education, 39,* 164-174.

Yonke, A.M. (1979). The art and science of clinical teaching. *Journal of Medical Education, 13,* 86-90.

Stritter, F., Hain, J., & Grimes, D. (1975). Clinical teaching reexamined. *Journal of Medical Education, 50,* 876-882.

Stritter, F., & Baker, R. (1982). Resident preferences for the clinical teaching of ambulatory care. *Journal of Medical Education, 57,* 33-41.

Jason, H. (1962). A study of medical teaching practices. *Journal of Medical Education, 37,* 1258.

Reichsman, F., Browning, F., & Hinshaw, J. (1964). Observations of undergraduate clinical teaching in action. *Journal of Medical Education, 39,* 147-163.

Foley, R., Smilansky, J., & Yonke, A. (1979). Teacher-student interaction in a medical clerkship. *Journal of Medical Education, 54,* 622-626.

Tremonti, L.P., & Biddle, W.B. (1982). Teaching behaviors of residents and faculty members. *Journal of Medical Education, 57,* 854-859.

Irby, D., Ramsey, P., Gillmore, G., & Schaad, D. (1991). Characteristics of effective clinical teachers of ambulatory care medicine. *Academic Medicine, 6,* 54-55.

Simpson, D., Lawrence, S., Grosenick, D., Krogull, S., & Westcot, M. (1990). An analysis of ambulatory teaching situations for faculty development. *Teaching and Learning in Medicine, 2,* 95-97.

Bennard, B. (1989). *Teaching in ambulatory settings: Implementing medical education in an emerging teaching environment.* Doctoral dissertation, University of North Carolina, Chapel Hill.

Feltovich, J., Mast, T., & Soler, N. (1989). Teaching medical students in ambulatory settings in departments of internal medicine. *Academic Medicine, 64,* 36-41.

Doyle, W. (1981). Research on classroom contexts. Journal of Teacher Education, 32, 6, 3-6.

Evertson, C., & Green, J. (1986). *Observation as inquiry and method. In: M. Wittrock (Ed.). Handbook of research on teaching.* New York, NY: American Educational Research Association & Macmillan.

Amidon, E, & Hough, J. (1967). *Interaction analysis: Theory, research and application.* Reading, MA: Addison-Wesley.

Weinholtz, D., Albanese, M., Zeitler, R., & Everett, G. (1989). Effects of individualized observation with feedback on attending physicians' clinical teaching. *Teaching and Learning in Medicine, 1,* 128-134.

Skeff, K.M., Campbell, M., & Stratos, G. (1985). Process and product in clinical teaching: A correlational study. In: *Research in medical education.* Proceedings of the 24th Annual Conference. Washington, DC: Association of American Medical Colleges.

Joyce, B., & Weil, M. (1980). *Models of teaching.* Englewood Cliffs, NJ: Prentice-Hall.

Weinholtz, D., Albanese, M., Zeitler, R., & Everett, G. (1986). Effective attending physician teaching: The correlation of observed instructional activities and learner ratings of teaching effectiveness. In: *Research in medical education.* Proceedings of the 25th Annual Conference. Washington, DC: Association of American Medical Colleges.

Knudson, M.P., Lawler, F.H., Zweig, S.C., Moreno, C.A., Hosokawa, M.C., & Black, R.L. (1989). Analysis of resident and attending physician interactions in family medicine. *Journal of Family Practice, 28,* 705-709.

Daggett, C.J. (1978). *A study to determine the role of attending physicians in the clinical training of medical students and resident physicians.* Doctoral dissertation, University of Massachusetts, Amherst.

A Proposal for Enhancing the Quality of Clinical Teaching: Results of a Department of Medicine's Educational Retreat. Guyatt, G., & Nishikawa, J. (1993).
Medical Teacher, 15, 147-161.

New challenges for clinical teachers include incorporating a deeper appreciation of the use of the published literature in day-to-day practice and teaching, responding to the profusion of diagnostic tests and treatments, and dealing with changing practical difficulties. We report a summary of a retreat conducted by our Department of Medicine in which our faculty presented and refined strategies they had developed to deal with these challenges. Areas of discussion include developing an effective medical team, managing time on a busy clinical service, teaching pathophysiology, teaching clinical skills, and teaching critical appraisal. Our observations are likely to be useful to clinicians involved in patient-centred teaching in wards and clinics, particularly those interacting with groups of undergraduates and post-graduate trainees.

References

Campbell, E.J.M. (1987). The diagnosing mind. *Lancet, i,* 849-851.

CIMPD (1991). *Training requirements in core internal medicine.* Unpublished document (Canadian Internal Medicine Program Directors).

Cox, K., & Ewan, C.E. (1988). *The medical teacher.* Edinburgh: Churchill Livingstone.

Douglas, K.C., Hosokawa, M.C., & Lawler, E.H. (1988). *A Practical Guide to clinical teaching in medicine.* New York, NY: Springer Publishing.

GPEP (1984). *Report on Educating Physicians for the twenty-first century.* Washington, DC: Association of American Medical Colleges.

Guyatt, G.H. (1991). Evidence-based medicine (editorial), *ACP Journal Club, A-16.* (Annals of Internal Medicine, 114, suppl. 2).

Irby, D.M. Clinical teacher effectiveness in medicine, Journal of Medical Education, 53, 808-815.

JAMA (1992). Evidence-based medicine working group. Evidence-based medicine: A new approach to teaching the practice of medicine. *JAMA, 268,* 2420-2425.

Lee, D.C., Johnson, R.A., Bingham, J.B., et al. Heart failure in outpatients. *New England Journal of Medicine, 306,* 699-705.

McLeod, P.J. (1986). A successful formula for ward rounds. *Canadian Medical Association Journal, 134,* 902-904.

McLeod, P.J., & Harden, R.M. (1985). Clinical teaching strategies for physicians. *Medical Teacher, 7,* 173-189.

Newble, D., & Cannon, R. (1981). A Handbook for Medical Teachers, 2nd edn. Lancaster: MTP Press Ltd.

Sackett, D.L. (1992). American Journal of Cardiology. A primer on the precision and accuracy of the clinical examination, *JAMA, 267,* 2638-2644.

Sackett, D.L., Haynes, R.B., Guyatt, G.H., & Tugwell, P. (1991). *Clinical epidemiology: A basic science for clinical medicine,* 2nd edn. Boston: Little, Brown and Co.).

Schwenk, T.L., & Whitman, N. (1981). *The Physician as Teacher.* Baltimore: Williams & Wilkins.

Skeff, K.M. (1983). Evaluation of a method for improving the teaching performance of attending physicians. *American Journal of Medicine, 75,* 465-470.

Stritter, F.T., Hain, J.D., & Grimes, D.A. (1975). Clinical teaching re-examined. *Journal of Medical Education, 50,* 876-882.

Tiberius, R.G., Sackin, H.D., Slingerland, J.M., Jubas, K., Bell, M., & Matlow, A. (1989). The influence of student evaluative feedback on the improvement of clinical teaching. *Journal of Higher Education, 60,* 665-681.

Weinholtz, D., Albanese, M., Zeitler, R., & Everett, G. (1985). Effects of individualized observation with feedback on attending physician's clinical teaching. *Teaching and Learning in Medicine, 1,* 128-134.

Yusuf, S., Petro, R, Lewis, J., Collins, R., & Sleight, P. (1985). Beta blockade during and after myocardial infarction: An overview of the randomized trials. *Progressive Cardiovascular Disease, 27,* 335-371.

Running a Workshop on Clinical Bedside Teaching: A Practical Guide. Bullimore, D. (1993).
Medical Teacher, 15, 49-55.

Clinical bedside teaching forms a major part of undergraduate medical education, but clinicians rarely have training in teaching or access to educational experts. Outlined is a programme used by a clinician to run a workshop for colleagues and students using collaborative learning. The workshop begins with a reflection on current teaching practice. Having determined priorities in bedside teaching a session is replanned to take account of these. A tutor-led session on dialogue skills is followed by further sessions on planning the teaching of a whole firm. Problems related to assessment are briefly considered to conclude the workshop. Despite limitations such workshops can successfully circumvent the scarcity of educationalists in the clinical setting. The workshop material is offered to other clinicians wishing to run similar workshops for colleagues.

Teaching and Assessment in the Consultation. A Workshop for General Practice Clinical Teachers. Preston-Whyte, M.E., Fraser, R.C., & McKinley, R.K. (1993).
Medical Teacher, 15, 141-146.
A faculty development programme for general practice clinical teachers offered a skills development workshop which specifically addressed the skills needed when teaching and assessing students consulting with patients. The course was sequential, that is, a group moved on to a new skill only when its members could demonstrate mastery of a lower-order skill. Participants practiced skills and received feedback on their performance from peers and learners (students and trainees). Participants' comments about the course were highly favourable and the majority foresaw a general improvement in their own personal consultation skills as a result. They recognized that the use of a valid and reliable set of criteria (the Leicester Assessment Package) was essential in order to make correct judgements about consultation performance before instituting remedial teaching.

NETWORK INFORMATION

Full Members

- Faculty of Medicine, University of Newcastle, Australia
- College of Medicine and Medical Sciences, Arabian Gulf University, Bahrain
- College of Health Sciences, Ministry of Health, Bahrain
- Institute of Applied Health Sciences, University of Chittagong, Bangladesh
- Faculty of Health Sciences, McMaster University, Hamilton, Canada
- Faculty of Medicine, University of Sherbrooke, Sherbrooke, Canada
- Medical Faculty, Universidad de la Frontera, Temuco, Chile
- Xian Medical University, Xian, China
- Faculty of Medicine, Escuela Colombiana de Medicina, Bogotá, Colombia
- University of Havana, High Institute of Sciences, Havana, Cuba
- Faculty of Medicine, Suez Canal University, Ismailia, Egypt
- Jimma Institute of Health Sciences, Jimma, Ethiopia
- Fiji School of Medicine, Suvai, Fiji
- Department of General Practice & PHC, University of Helsinki, Helsinki, Finland
- Medical Faculty, University of Tampere, Tampere, Finland
- Medical School, University of Ghana, Accra, Ghana
- School of Medical Sciences, University of Science and Technology, Kumasi, Ghana
- Christian Medical College, Vellore, India
- School of Medicine, Gadjah Mada University, Yogyakarta, Indonesia
- College of Medicine, Tikrit University, Tikrit, Iraq
- Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer-Sheva, Israel
- Medical School, University of Bari, Bari, Italy
- I.C.H.M., Istituto Superiore di Sanità, Rome, Italy
- Deparment of Hygiene and Community Medicine, University of Turin, Italy
- School of Medical Sciences, University Sains Malaysia, Kubang Kerian, Kelantan, Malaysia
- Faculty of Health Sciences, Universidad Autónoma Metropolitana Xochimilco, México
- School of Health Sciences, Universidad Autónoma de Nuevo León, Nuevo León, México
- Faculty of Health Sciences, University of Limburg, Maastricht, The Netherlands
- Faculty of Medicine, University of Limburg, Maastricht, The Netherlands
- Faculty of Clinical Sciences, Bayero University, Kano, Nigeria
- College of Medicine, Ogun State University, Sagamu, Ogun State, Nigera
- Faculty of Health Sciences, University of Ilorin, Ilorin, Nigeria
- College of Medical Sciences, University of Maiduguri, Maiduguri, Nigeria
- School of Medicine, University of Tromsø, Tromsø, Norway
- Faculty of Health Sciences, Aga Khan University, Karachi, Pakistan

- Baqai Medical College, Karachi, Pakistan
- College of Medicine, University of The Philippines, Manila, The Philippines
- College of Medicine and Health Sciences, Omdurman Islamic Univ., Omdurman, Sudan
- College for Women, Ahfad University, Omdurman, Sudan
- School of Medicine, University of Gezira, Wad Medani, Sudan
- Faculty of Medicine, Health University, Linköping, Sweden
- Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand
- Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
- Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand
- Faculty of Medicine, Prince of Songkhla University, Songkhla, Thailand
- Medical School, Thammasat University, Thailand
- Faculty of Medicine, Makerere University, Kampala, Uganda
- Faculty of Medicine, Brown University, Providence, U.S.A.
- College of Human Medicine, Michigan State University, East Lansing, U.S.A.
- College of Osteopathic Medicine, Michigan State University, East Lansing, U.S.A.
- School of Medicine, Southern Illinois University, Springfield, U.S.A.
- College of Medicine at Rockford, University of Illinois, Rockford, U.S.A.
- School of Medicine, University of New Mexico, Albuquerque, U.S.A.
- School of Medicine, University of North Carolina, Chapel Hill, U.S.A.
- Faculty of Medicine, Universidad de la República, Montevideo, Uruguay
- School of Medicine, University of Zambia, Lusaka, Zambia

Members of the Executive Committee

- Prof.dr. Jacques Des Marchais, Chairman, University of Sherbrooke, Faculty of Medicine, 3001, 12th Avenue North, Sherbrooke, Québec, Canada
- Prof.dr. Zohair Nooman, Secretary General, Suez Canal University, Faculty of Medicine, Ismailia, Egypt
- Prof.dr. Henk Schmidt, Associate Secretary General, University of Limburg, Faculty of Health Sciences, P.O. Box 616, 6200 MD Maastricht, The Netherlands
- Prof. dr. Benjamin Aiyedun, University of Ilorin, Faculty of Health Sciences, P.M.B. 1515, Ilorin, Nigeria
- Prof. dr. Esmat Ezzat, Suez Canal University, Faculty of Medicine, Ismailia, Egypt
- Prof.dr. Abraham Joseph, Christian Medical College, Bagayam, Vellore 632002, North Arcot Ambedkar District, Tamil Nadu, India
- Prof. dr. Mohi Eldin Magzoub, University of Gezira, Faculty of Medicine, Wad Medani, Sudan
- Prof.dr. Adelita Sanchez Flores, Universidad Autónoma Metropolitana Xochimilco, Division of Biological and Health Sciences, Calz. del Hueso No. 1100, Col. Villa Quietud, Delegación Coyoacán, Mexico
- Prof.dr. Sharifah Hapsah S.H. Shahabudin, University Kebangsaan Malaysia, Faculty of Medicine, Jalan Raja Muda, 50300 Kuala Lumpur, Malaysia

Central Secretariat

Pauline M.J. Vluggen, P.O.B. 616, 6200 MD Maastricht, The Netherlands.

The Network of Community-Oriented Educational Institutions for Health Sciences

General Aim

The general aim of the Network is to provide mutual support to member institutions who wish to adapt their curricula to the health needs of the communities which they serve.

Main Objectives

There are five primary objectives:

- strengthening of membership institutions in their implementation of community-oriented learning and appropriate instructional methods;
- strengthening of faculty competences related to community-based education;
- developing techniques, approaches, methods and tools appropriate to a community-oriented curriculum, e.g. problem-based learning;
- promoting population concepts in the health services system and the curriculum;
- assisting institutions in countries that have decided to introduce innovations in the training of health personnel, with the ultimate goal to improve health care and to contribute to the achievement of "Health for All".

To achieve these objectives, several additional objectives have been identified:

- Facilitating the development of curricula for health professions which help students become competent in the solution of health problems of communities, as well as of individuals and families in a community context.

- Problem-based learning is seen as a powerful educational strategy to maximize students' acquisition of relevant knowledge, skills and attitudes. Specific considerations include:

    - the systematic selection of problems and population-based concepts which represent the health needs of the community;
    - the definition of relevant skills, including skills in problem-solving, independent learning, critical appraisal of evidence, and teamwork;
    - the strengthening of teaching capability of staff related to community-orientation and problem-based learning;
    - the development of methods for curriculum design and learning tools appropriate to a community- and problem-based curriculum;
    - the design of procedures and tools for the assessment of student and graduate performance;

- the evaluation of innovative programmes including their contribution to the development of effective, efficient and humane health care, and the commitment to "Health for All by the Year 2000", as promoted by the World Health Organization.

- Implement health research programmes that include basic, applied and operational research that is relevant to health and health care problems in the community served by the institution. Particular attention is given to strengthening health systems and epidemiological research.

- Establishing relationships with the health care services and health care delivery. This link is intended to promote coordination between health care services, health manpower development and the promotion of primary care.

- Describing and developing organisational and managament strategies which maximize the achievement of institutional goals within the community setting.

The Network sees community-orientation and problem-based learning as specific issues which merit particular emphasis at the present phase of evolution of education in the health sciences. As the needs for health care and the further development of the health sciences and practices change, the Network will reconsider its priorities in the education of health professionals.

Membership of the Network

Since 1979 the membership has grown to a total of 56 full member institutions, 106 associate member institutions and 63 corresponding members in 1994. There are four types of membership:

1. Full membership can be acquired by educational institutions for health sciences which implement community-oriented education and which are willing to collaborate with other institutions in achieving the goals of the Network. Full members have voting rights. (membership fee: US $ 100/500 p.a.)

2. Associate membership can be acquired by institutions, organisations or groups which are interested in the objectives of the Network and the activities that flow from them and wish to play an active part in them. Associate membership can also be acquired with a view to the acquisition of full membership at a later stage. Associate members may not vote. (membership fee: US $ 50 p.a.)

3. Corresponding membership can be acquired by individuals who are interested in the objectives of the Network. Corresponding members may not vote. (membership fee: US $ 25 p.a.)

4. Honorary membership will be granted to individuals who have rendered exceptional service to the Network. Honorary members may not vote.

Enquiries should be addressed to Pauline M.J. Vluggen, Network Secretariat, P.O.B. 616, 6200 MD Maastricht, The Netherlands.